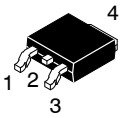
ECOSPARK® Ignition IGBT

300 mJ, 400 V, N−Channel Ignition IGBT

ISL9V3040D3STV



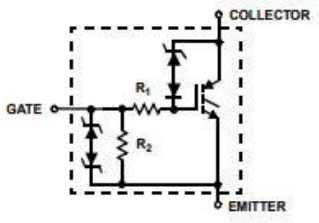
DPAK (SINGLE GAUGE)
CASE 369C

Features

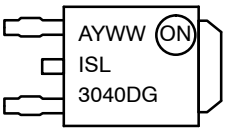
- SCIS Energy = 300 mJ at T_J = 25°C
- Logic Level Gate Drive
- This Device is Pb−Free and is RoHS Compliant
- AEC−Q101 Qualified and PPAP Capable

Applications

- Automotive Ignition Coil Driver Circuits
- High Current Ignition System
- Coil on Plug Applications



MARKING DIAGRAM



ISL3040DG	= Device Code
A	= Assembly Location
Y	= Year
WW	= Work Week
G	= Pb−Free Package

MAXIMUM RATINGS (T_J = 25°C Unless Otherwise Stated)

Parameter	Symbol	Value	Units
Collector to Emitter Breakdown Voltage (I_C = 1 mA)	BV_{CER}	400	V
Emitter to Collector Voltage − Reverse Battery Condition (I_C = 10 mA)	BV_{ECS}	24	V
ISCIS = 14.2 A, L = 3.0 mHz, R_{GE} = 1 KΩ (Note 1), T_C = 25°C	E_{SCIS25}	300	mJ
ISCIS = 10.6 A, L = 3.0 mHz, R_{GE} = 1 KΩ (Note 2), T_C = 150°C	$E_{SCIS150}$	170	mJ
Collector Current Continuous, at V_{GE} = 4.0 V, T_C = 25°C	IC25	21	A
Collector Current Continuous, at V_{GE} = 4.0 V, T_C = 110°C	IC110	17	A
Gate to Emitter Voltage Continuous	V_{GEM}	±10	V
Power Dissipation Total, T_C = 25°C	PD	150	W
Power Dissipation Derating, T_C > 25°C	PD	1	W/°C
Operating Junction and Storage Temperature	T_J, T_{STG}	−55 to 175	°C
Lead Temperature for Soldering Purposes (1/8" from case for 10 s)	T_L	300	°C
Reflow soldering according to JESD020C	T_{PKG}	260	°C
HBM−Electrostatic Discharge Voltage at100 pF, 1500 Ω	ESD	4	kV
CDM−Electrostatic Discharge Voltage at 1 Ω	ESD	2	kV

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. Self Clamped inductive Switching Energy (ESCIS25) of 300 mJ is based on the test conditions that is starting T_J = 25°C, L = 3 mHz, ISCIS = 14.2 A, V_{CC} = 100 V during inductor charging and V_{CC} = 0 V during time in clamp.
2. Self Clamped inductive Switching Energy (ESCIS150) of 170 mJ is based on the test conditions that is starting T_J = 150°C, L = 3 mHz, ISCIS = 10.6 A, V_{CC} = 100 V during inductor charging and V_{CC} = 0 V during time in clamp.

ORDERING INFORMATION

Device	Package	Shipping†
ISL9V3040D3STV	DPAK (Pb−Free)	2500 / Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

© Semiconductor Components Industries, LLC, 2019

THERMAL RESISTANCE RATINGS

Characteristic	Symbol	Max	Units
Junction−to−Case − Steady State (Drain) (Notes 1, 3 and 4)	$R_{\theta JC}$	1	°C/W

ELECTRICAL CHARACTERISTICS (T_J = 25°C Unless Otherwise Specified)

Parameter	Symbol	Test Condition		Min	Typ	Max	Unit
OFF CHARACTERISTICS							
Collector to Emitter Breakdown Voltage	BV_{CER}	I_{CE} = 2 mA, V_{GE} = 0 V, R_{GE} = 1 KΩ, T_J = −40 to 150°C		370	400	430	V
Collector to Emitter Breakdown Voltage	BV_{CES}	I_{CE} = 10 mA, V_{GE} = 0 V, R_{GE} = 0, T_J = −40 to 150°C		390	420	450	V
Emitter to Collector Breakdown Voltage	BV_{ECS}	I_{CE} = −75 mA, V_{GE} = 0 V, T_J = 25°C		30	−	−	V
Gate to Emitter Breakdown Voltage	BV_{GES}	I_{GES} = ±2 mA		±12	±14	−	V
Collector to Emitter Leakage Current	I_{CER}	V_{CE} = 175 V, R_{GE} = 1 KΩ	T_J = 25°C	−	−	25	μA
			T_J = 150°C	−	−	1	mA
Emitter to Collector Leakage Current	I_{ECS}	V_{EC} = 24 V	T_J = 25°C	−	−	1	mA
			T_J = 150°C	−	−	40	
Series Gate Resistance	R_1			−	70	−	Ω
Gate to Emitter Resistance	R_2			10 K	−	26 K	Ω
ON CHARACTERISTICS							
Collector to Emitter Saturation Voltage	$V_{CE(SAT)}$	I_{CE} = 6 A, V_{GE} = 4 V, T_J = 25°C		−	1.25	1.65	V
Collector to Emitter Saturation Voltage	$V_{CE(SAT)}$	I_{CE} = 10 A, V_{GE} = 4.5 V, T_J = 150°C		−	1.58	1.80	V
Collector to Emitter Saturation Voltage	$V_{CE(SAT)}$	I_{CE} = 15 A, V_{GE} = 4.5 V, T_J = 150°C		−	1.90	2.20	V
DYNAMIC CHARACTERISTICS							
Gate Charge	$Q_{G(ON)}$	I_{CE} = 10 A, V_{CE} = 12 V, V_{GE} = 5 V		−	17	−	nC
Gate to Emitter Threshold Voltage	$V_{GE(TH)}$	I_{CE} = 1 mA, V_{CE} = V_{GE}	T_J = 25°C	1.3	−	2.2	V
			T_J = 150°C	0.75	−	1.8	
Gate to Emitter Plateau Voltage	V_{GEP}	V_{CE} = 12 V, I_{CE} = 10 A		−	3.0	−	V
SWITCHING CHARACTERISTICS							
Current Turn−On Delay Time−Resistive	$td_{(ON)R}$	V_{CE} = 14 V, R_L = 1 Ω, V_{GE} = 5 V, R_G = 470 Ω, T_J = 25°C		−	0.7	4	μs
Current Rise Time−Resistive	t_{rR}			−	2.1	7	
Current Turn−Off Delay Time−Inductive	$td_{(OFF)L}$	V_{CE} = 300 V, L = 1 mH, V_{GE} = 5 V, R_G = 470 Ω, I_{CE} = 6.5 A, T_J = 25°C		−	4.8	15	
Current Fall Time−Inductive	tfL			−	2.8	15	

Share Feedback
Your Opinion Matters

TYPICAL CHARACTERISTICS

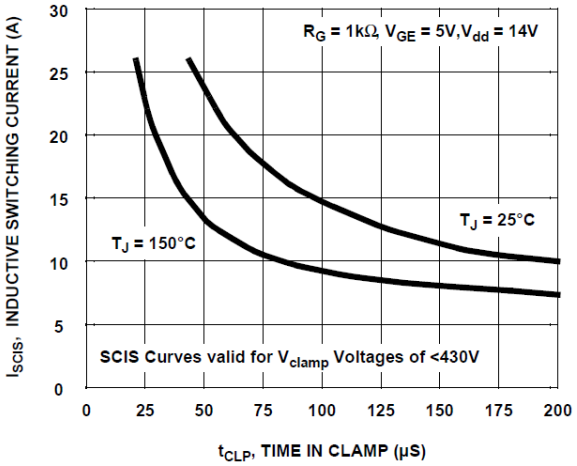


Figure 1. Self Clamped Inductive Switching Current vs. Time in Clamp

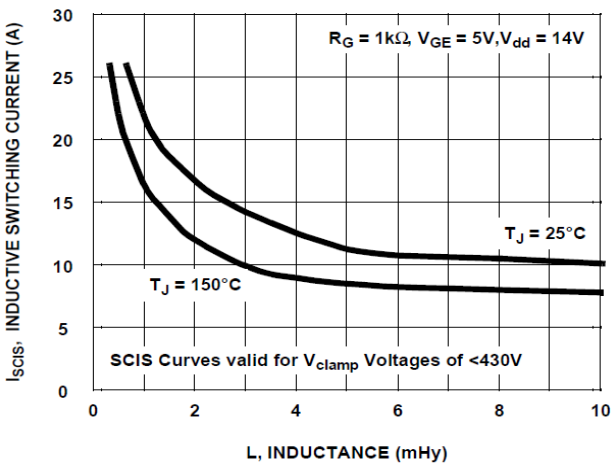


Figure 2. Self Clamped Inductive Switching Current vs. Inductance

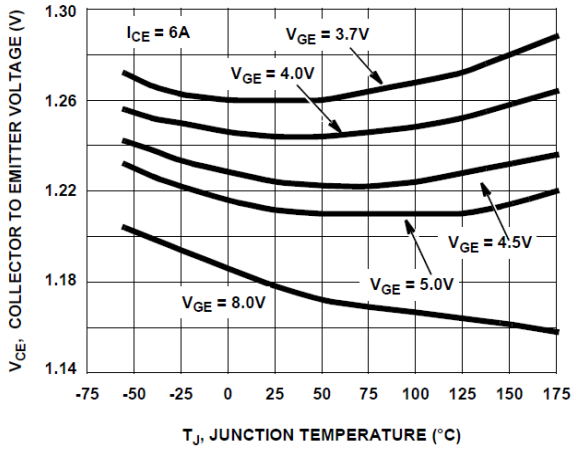


Figure 3. Collector to Emitter On−State Voltage vs. Junction Temperature

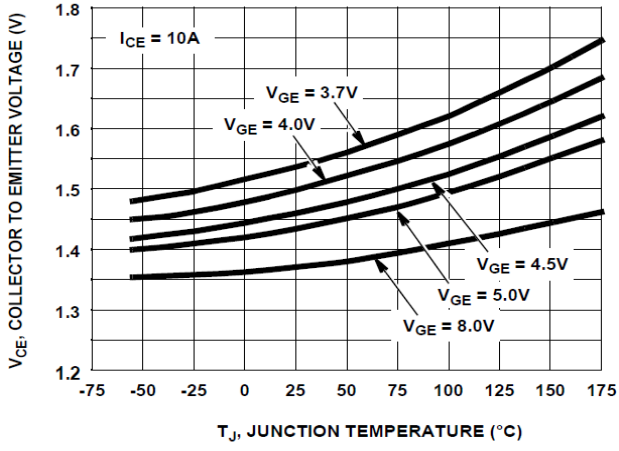


Figure 4. Collector to Emitter On−State Voltage vs. Junction Temperature

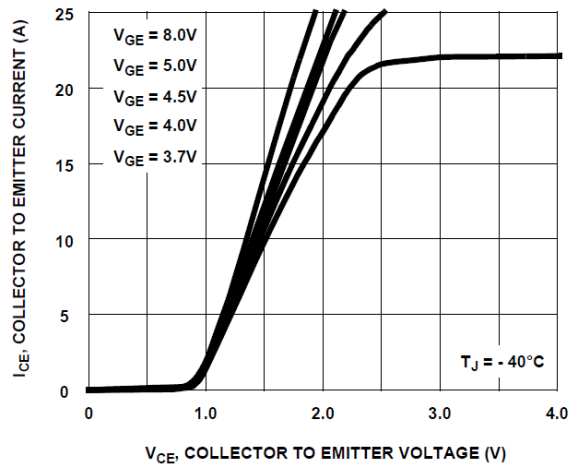


Figure 5. Collector to Emitter On−State Voltage vs. Collector Current

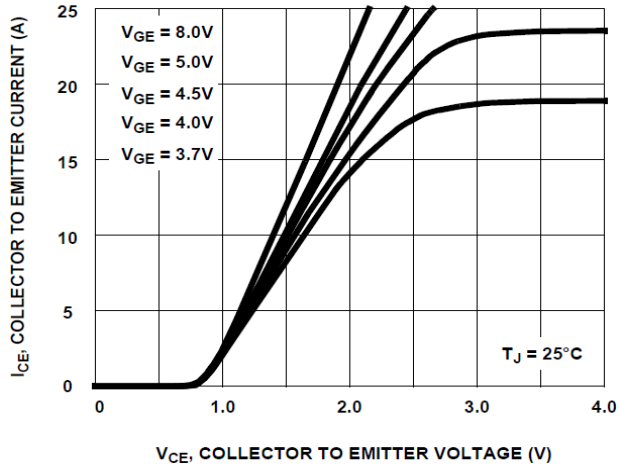


Figure 6. Collector to Emitter On− State Voltage vs. Collector Current

Share Feedback
Your Opinion Matters

TYPICAL CHARACTERISTICS (continued)

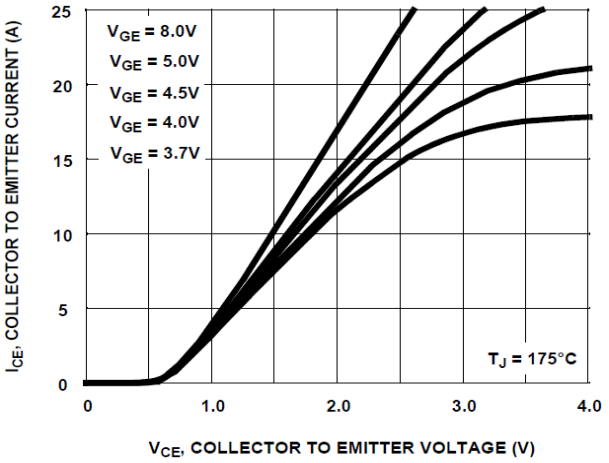


Figure 7. Collector to Emitter On−State Voltage vs. Collector Current

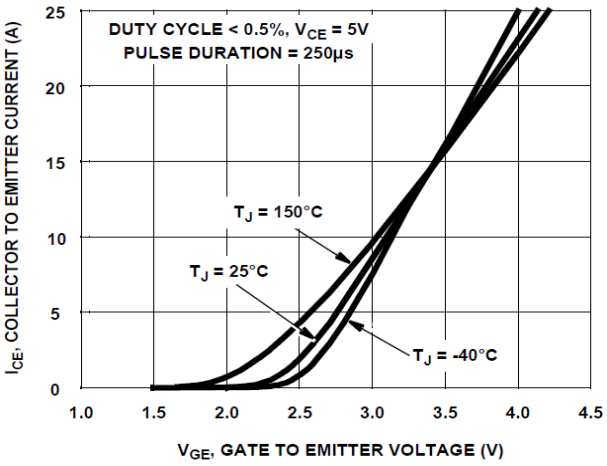


Figure 8. Transfer Characteristics

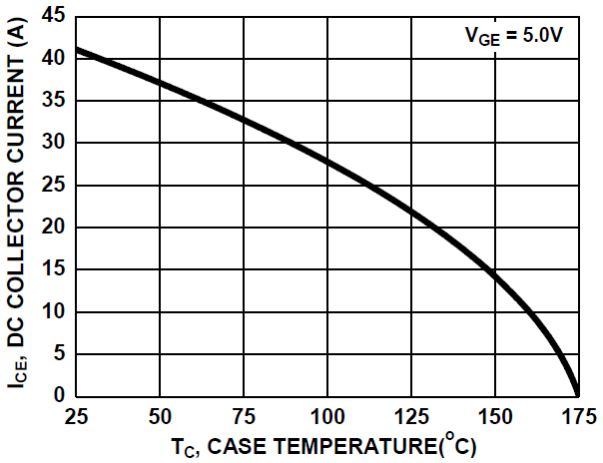


Figure 9. DC Collector Current vs. Case Temperature

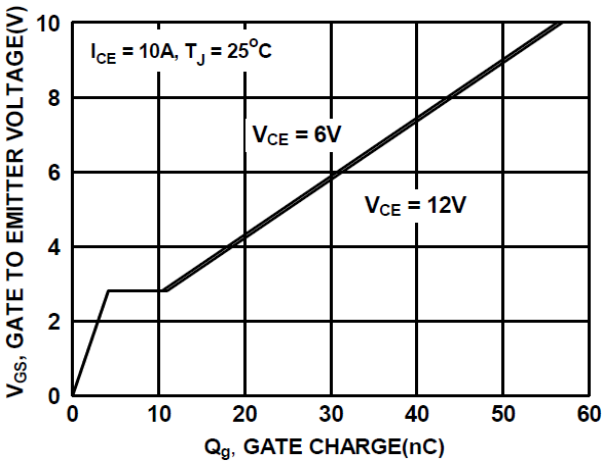


Figure 10. Gate Charge

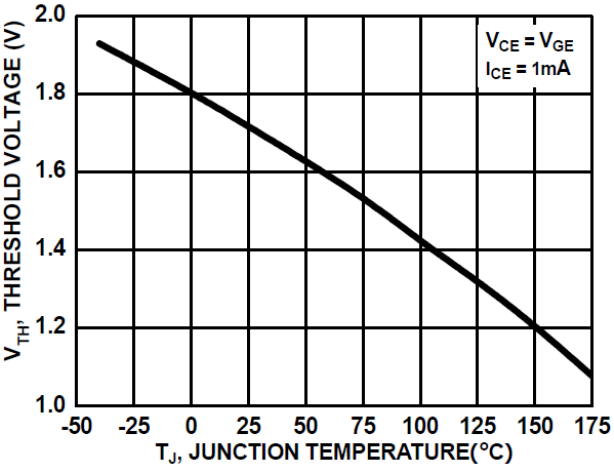


Figure 11. Threshold Voltage vs. Junction Temperature

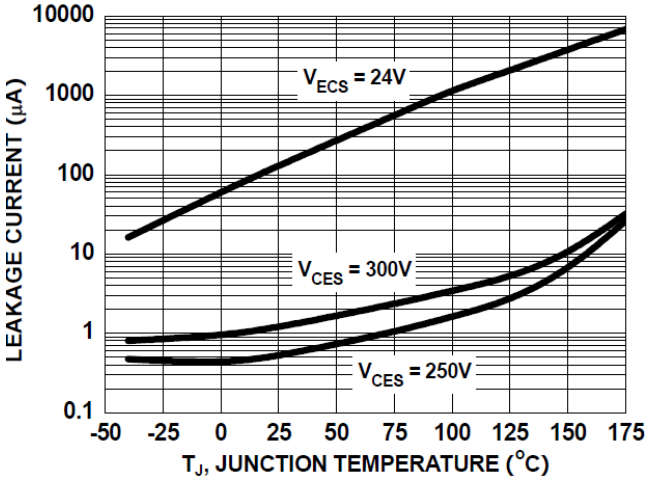


Figure 12. Leakage Current vs. Junction Temperature

Share Feedback
Your Opinion Matters

TYPICAL CHARACTERISTICS (continued)

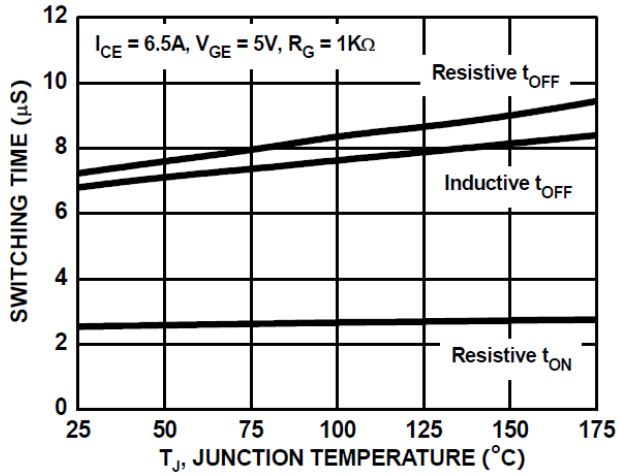


Figure 13. Switching Time vs. Junction Temperature

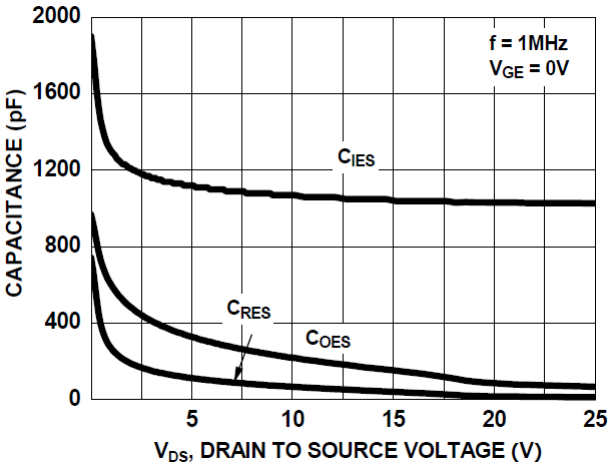


Figure 14. Capacitance vs. Collector to Emitter Voltage

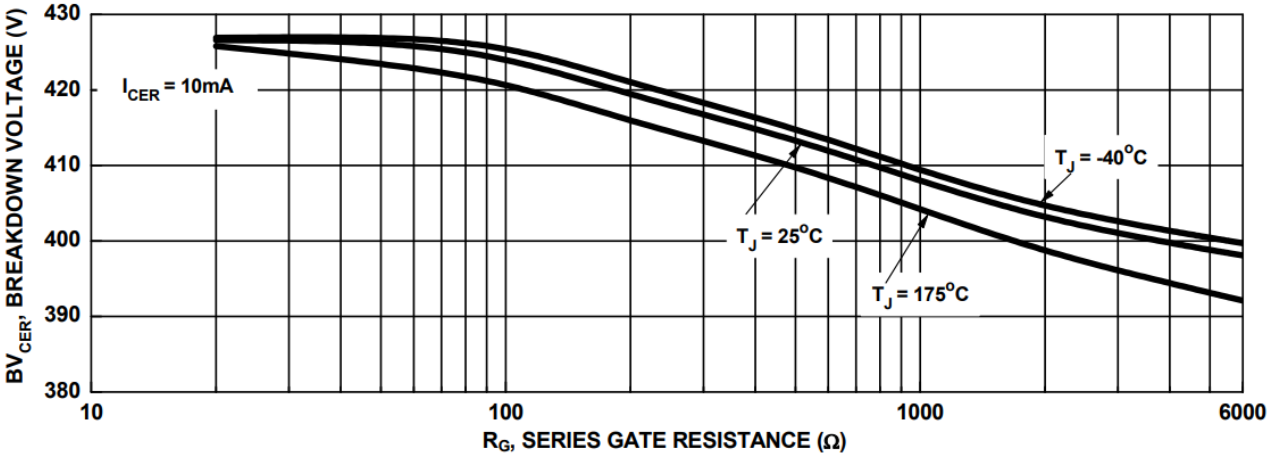


Figure 15. Break down Voltage vs. Series Resistance

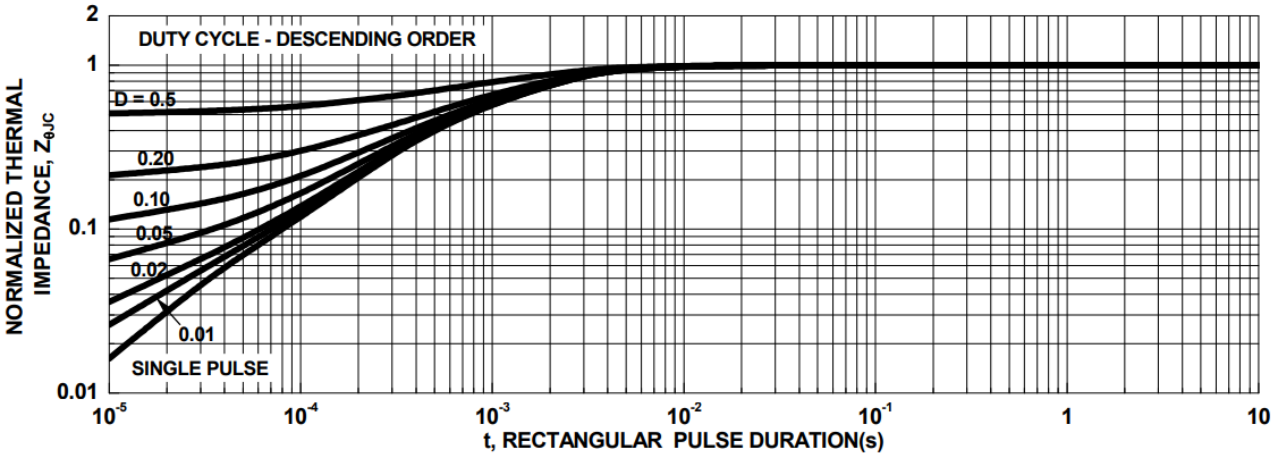


Figure 16. IGBT Normalized Transient Thermal Impedance, Junction to Case

Share Feedback
Your Opinion Matters

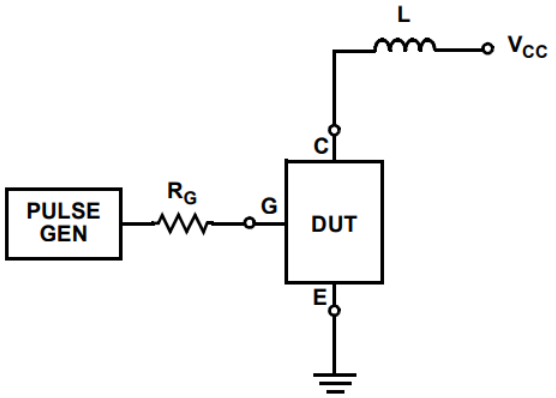


Figure 17. Inductive Switching Test Circuit

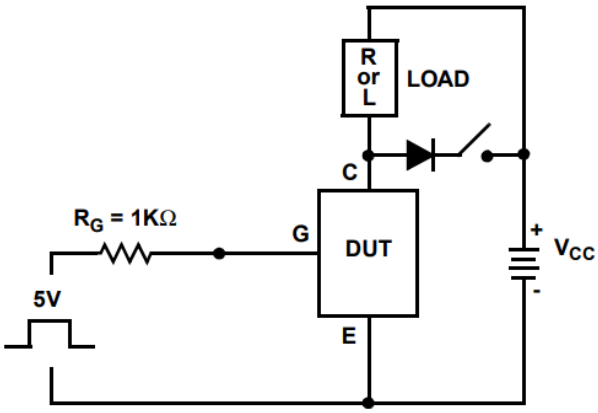


Figure 18. t_{ON} and t_{OFF} Switching Test Circuit

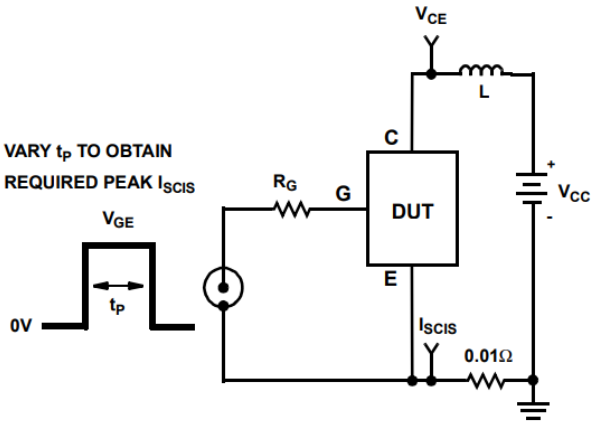


Figure 19. Energy Test Circuit

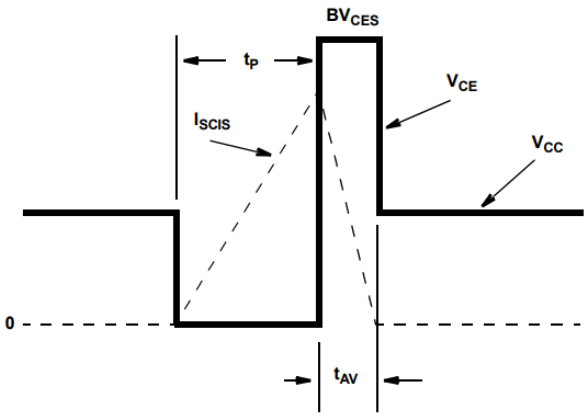
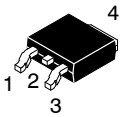


Figure 20. Energy Waveforms

ECOSPARK is registered trademark of Semiconductor Components Industries, LLC dba “**onsemi**” or its affiliates and/or subsidiaries in the United States and/or other countries.

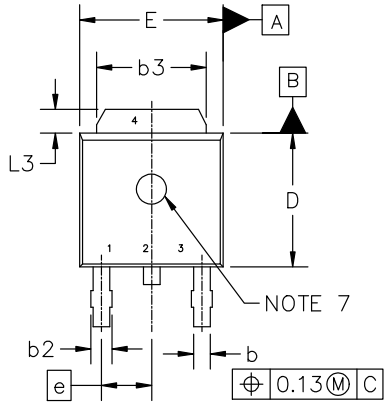
Share Feedback
Your Opinion Matters



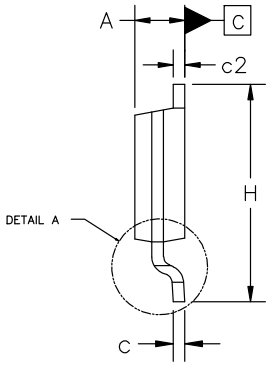
SCALE 1:1

DPAK−3 6.10x6.54x2.28, 2.29P
CASE 369C
ISSUE L

DATE 24 AUG 2026

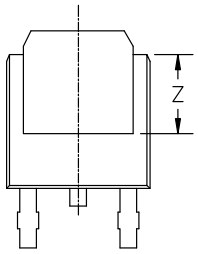


TOP VIEW

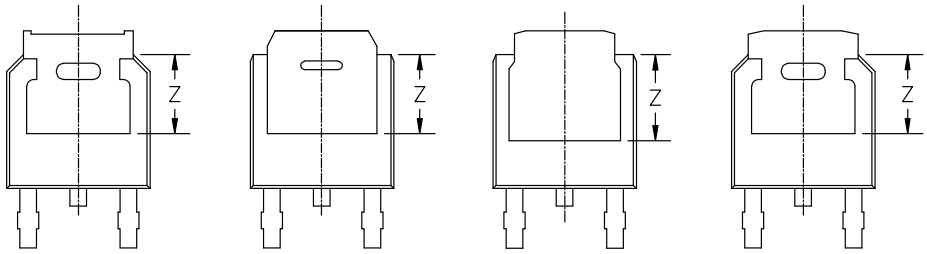


SIDE VIEW

MILLIMETERS			
DIM	MIN	NOM	MAX
A	2.18	2.28	2.38
A1	0.00	−−−	0.13
b	0.63	0.76	0.89
b2	0.72	0.93	1.14
b3	4.57	5.02	5.46
c	0.46	0.54	0.61
c2	0.46	0.54	0.61
D	5.97	6.10	6.22
E	6.35	6.54	6.73
e	2.29 BSC		
H	9.40	9.91	10.41
L	1.40	1.59	1.78
L1	2.90 REF		
L2	0.51 BSC		
L3	0.89	−−−	1.27
L4	−−−	−−−	1.01
Z	3.93	−−−	−−−



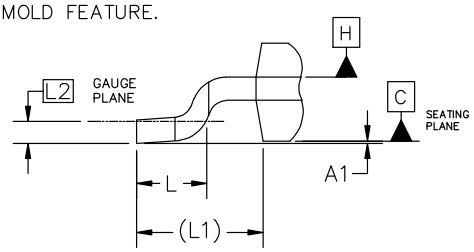
BOTTOM VIEW



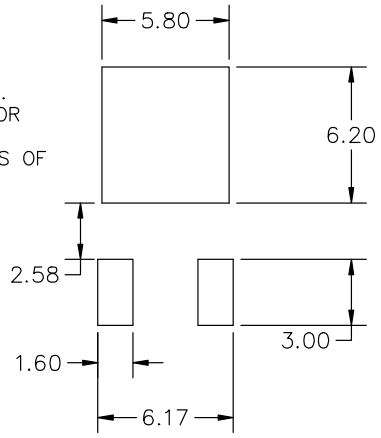
ALTERNATE CONSTRUCTIONS

NOTES:

1. DIMENSIONING AND TOLERANCING ASME Y14.5M, 2018.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. THERMAL PAD CONTOUR OPTIONAL WITHIN DIMENSIONS b3, L3, AND Z.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR BURRS.
5. DIMENSIONS D AND E ARE DETERMINED AT THE OUTERMOST EXTREMES OF THE PLASTIC BODY.
6. DATUMS A AND B ARE DETERMINED AT DATUM PLANE H.
7. OPTIONAL MOLD FEATURE.



DETAIL A
ROTATED 90° CW



RECOMMENDED MOUNTING FOOTPRINT*
*For additional information on our Pb−Free strategy and soldering details, please download the onsemi Soldering and Mounting Techniques reference manual, SOLDERRM/D.

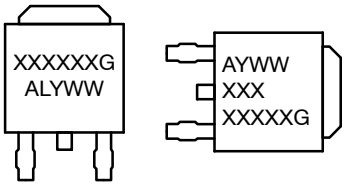
DOCUMENT NUMBER:	**98AON10527D**	Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.
DESCRIPTION:	**DPAK−3 6.10x6.54x2.28, 2.29P**	**PAGE 1 OF 2**

onsemi and onsemi are trademarks of Semiconductor Components Industries, LLC dba **onsemi** or its subsidiaries in the United States and/or other countries. **onsemi** reserves the right to make changes without further notice to any products herein. **onsemi** makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does **onsemi** assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. **onsemi** does not convey any license under its patent rights nor the rights of others.

DPAK−3 6.10x6.54x2.28, 2.29P
CASE 369C
ISSUE L

DATE 24 AUG 2026

GENERIC MARKING DIAGRAM*



IC **Discrete**

XXXXXX	= Device Code
A	= Assembly Location
L	= Wafer Lot
Y	= Year
WW	= Work Week
G	= Pb−Free Package

*This information is generic. Please refer to device data sheet for actual part marking. Pb−Free indicator, “G” or microdot “▪”, may or may not be present. Some products may not follow the Generic Marking.

STYLE 1:
PIN 1. BASE
2. COLLECTOR
3. EMITTER
4. COLLECTOR

STYLE 2:
PIN 1. GATE
2. DRAIN
3. SOURCE
4. DRAIN

STYLE 3:
PIN 1. ANODE
2. CATHODE
3. ANODE
4. CATHODE

STYLE 4:
PIN 1. CATHODE
2. ANODE
3. GATE
4. ANODE

STYLE 5:
PIN 1. GATE
2. ANODE
3. CATHODE
4. ANODE

STYLE 6:
PIN 1. MT1
2. MT2
3. GATE
4. MT2

STYLE 7:
PIN 1. GATE
2. COLLECTOR
3. EMITTER
4. COLLECTOR

STYLE 8:
PIN 1. N/C
2. CATHODE
3. ANODE
4. CATHODE

STYLE 9:
PIN 1. ANODE
2. CATHODE
3. RESISTOR ADJUST
4. CATHODE

STYLE 10:
PIN 1. CATHODE
2. ANODE
3. CATHODE
4. ANODE

onsemi and ONSEMI are trademarks of Semiconductor Components Industries, LLC dba **onsemi** or its subsidiaries in the United States and/or other countries. **onsemi** reserves the right to make changes without further notice to any products herein. **onsemi** makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does **onsemi** assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. **onsemi** does not convey any license under its patent rights nor the rights of others.

© Semiconductor Components Industries, LLC, 2011

onsemi, , and other names, marks, and brands are registered and/or common law trademarks of Semiconductor Components Industries, LLC dba "**onsemi**" or its affiliates and/or subsidiaries in the United States and/or other countries. **onsemi** owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of **onsemi**'s product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent−Marking.pdf. **onsemi** reserves the right to make changes at any time to any products or information herein, without notice. The information herein is provided "as−is" and **onsemi** makes no warranty, representation or guarantee regarding the accuracy of the information, product features, availability, functionality, or suitability of its products for any particular purpose, nor does **onsemi** assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using **onsemi** products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by **onsemi**. "Typical" parameters which may be provided in **onsemi** data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. **onsemi** does not convey any license under any of its intellectual property rights nor the rights of others. **onsemi** products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use **onsemi** products for any such unintended or unauthorized application, Buyer shall indemnify and hold **onsemi** and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that **onsemi** was negligent regarding the design or manufacture of the part. **onsemi** is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

ADDITIONAL INFORMATION

TECHNICAL PUBLICATIONS:
Technical Library: www.onsemi.com/design/resources/technical−documentation
onsemi Website: www.onsemi.com

ONLINE SUPPORT: www.onsemi.com/support
For additional information, please contact your local Sales Representative at www.onsemi.com/support/sales

ENTEGRECİ

Bu belge www.entegreci.com üzerinden sunulmaktadır.

Elektronik komponent tedarikinde Entegreci

Entegreci, Eskişehir merkezli, Türkiye geneline satış yapan bir elektronik komponent mağazasıdır. Entegreler (IC), mikrodenetleyiciler, transistörler, diyotlar, pasif elemanlar, konnektörler, modüller ve geliştirme kartları tek adetten seri üretim adetlerine kadar satılır. Ürün sayfalarında güncel stok durumunu, fiyatı ve datasheet bağlantısını bulabilirsiniz.

Parça koduyla arama

Üretici parça numarasını yazın; stok ve fiyatı hemen görün.

www.entegreci.com

Ürün kategorileri

Entegreden kapasitöre tüm elektronik komponent kategorileri.

Kategorilere göz atın

Üreticiler

Aradığınız üreticinin ürünlerini tek sayfada inceleyin.

Üreticileri görün

Toplu alım ve teklif

Listede olmayan ya da yüksek adetli parçalar için teklif isteyin.

Teklif isteyin

www.entegreci.com | **destek@entegreci.com** | **0850 305 90 34**

Entegreci is an online electronic components store based in Türkiye. Search by manufacturer part number to see stock, prices and datasheets for integrated circuits, microcontrollers, transistors, passive components and connectors, or request a quote for parts that are not listed.

Bu sayfa Entegreci tarafından eklenmiştir. Belgenin önceki sayfaları asıl yayıncısına aittir ve içeriği değiştirilmemiştir; en güncel sürüm için belgenin yayıncısına başvurun.