N-Channel Power MOSFET

600V, 4A, 2.5Ω

FEATURES

- 100% Avalanche Tested
- Pb-free plating
- RoHS compliant
- Halogen-free according to IEC 61249-2-21

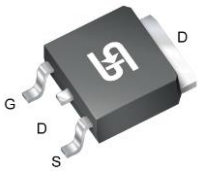
PRODUCT SUMMARY			
PARAMETER		**VALUE**	**UNIT**
V_{DS}		600	V
$R_{DS(on)}$ (max)	V_{GS} = 10V	2.5	Ω
Q_g	V_{GS} = 10V	16	nC

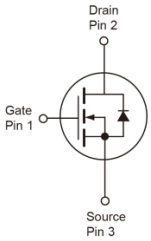
APPLICATIONS

- Lighting
- Charger
- Power Supply
- Switching applications

Pb-Free RoHS COMPLIANT HALOGEN FREE

TO-252 (DPAK)





Note: MSL 3 (Moisture Sensitivity Level) per J-STD-020

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C unless otherwise noted)				
PARAMETER		**SYMBOL**	**LIMIT**	**UNIT**
Drain-Source Voltage		V_{DS}	600	V
Gate-Source Voltage		V_{GS}	±30	V
Continuous Drain Current (Note 1)	T_C = 25°C	I_D	4	A
	T_C = 100°C		2.7	
Pulsed Drain Current		I_{DM}	16	A
Single Pulse Avalanche Current (Note 2)		I_{AS}	4.6	A
Single Pulse Avalanche Energy (Note 2)		E_{AS}	84	mJ
Total Power Dissipation	T_C = 25°C	P_D	114	W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	- 55 to +150	°C

THERMAL RESISTANCE			
PARAMETER	**SYMBOL**	**MAXIMUM**	**UNIT**
Thermal Resistance – Junction to Case	$R_{\Theta JC}$	1.1	°C/W
Thermal Resistance – Junction to Ambient	$R_{\Theta JA}$	62	°C/W

Note: $R_{\Theta JA}$ is the sum of the junction-to-case and case-to-ambient thermal resistances. The case-thermal reference is defined at the solder mounting surface of the drain pins. $R_{\Theta JC}$ is guaranteed by design while $R_{\Theta CA}$ is determined by the user's board design

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)						
PARAMETER	**CONDITIONS**	**SYMBOL**	**MIN**	**TYP**	**MAX**	**UNIT**
Static						
Drain-Source Breakdown Voltage	V_{GS} = 0V, I_D = 250μA	BV_{DSS}	600	--	--	V
Gate Threshold Voltage	V_{GS} = V_{DS}, I_D = 250μA	$V_{GS(TH)}$	2.5	2.8	4.5	V
Gate-Source Leakage Current	V_{GS} = ±30V, V_{DS} = 0V	I_{GSS}	--	--	±100	nA
Drain-Source Leakage Current	V_{GS} = 0V, V_{DS} = 600V	I_{DSS}	--	--	1	μA
Drain-Source On-State Resistance **(Note 3)**	V_{GS} = 10V, I_D = 2A	$R_{DS(on)}$	--	2	2.5	Ω
Forward Transfer Conductance	V_{DS} = 10V, I_D = 2A	g_{fs}	--	4	--	S
Dynamic						
Total Gate Charge	V_{GS} = 10V, V_{DS} = 480V, I_D = 4A	Q_g	--	16	--	nC
Gate-Source Charge		Q_{gs}	--	2.6	--	
Gate-Drain Charge		Q_{gd}	--	7	--	
Input Capacitance	V_{GS} = 0V, V_{DS} = 25V, f = 1.0MHz	C_{iss}	--	574	--	pF
Output Capacitance		C_{oss}	--	56	--	
Reverse Transfer Capacitance		C_{rss}	--	7	--	
Switching **(Note 4)**						
Turn-On Delay Time	V_{GS} = 10V, V_{DS} = 300V, I_D = 4A, R_G = 25Ω	$t_{d(on)}$	--	11	--	ns
Rise Time		t_r	--	14	--	
Turn-Off Delay Time		$t_{d(off)}$	--	38	--	
Fall Time		t_f	--	21	--	
Source-Drain Diode						
Diode Forward Voltage **(Note 3)**	V_{GS} = 0V, I_S = 4A	V_{SD}	--	--	1.13	V
Reverse Recovery Time	V_{GS} = 10V, I_S = 2A, dI_F/dt = 100A/μs	t_{rr}	--	188	--	ns
Reverse Recovery Charge		Q_{rr}	--	1.1	--	μC
Source Current **(Note 1)**	Integral reverse diode In the MOSFET	I_S	--	--	4	A
Source Current (Pulse)		I_{SM}	--	--	16	

Notes:

1. Pulsed width limited by maximum junction temperature.
2. L = 8mH, V_{GS} = 10V, R_G = 25Ω , Starting T_J = 25°C.
3. Pulse test: Pulse Width ≤ 300μs, duty cycle ≤ 2%.
4. Switching time is essentially independent of operating temperature.

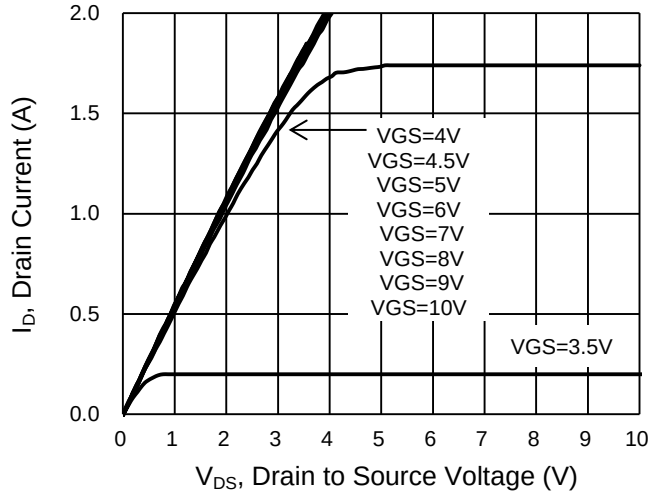
ORDERING INFORMATION

ORDERING CODE	PACKAGE	PACKING
TSM4NB60CP ROG	TO-252 (DPAK)	2,500 pcs / 13” Reel

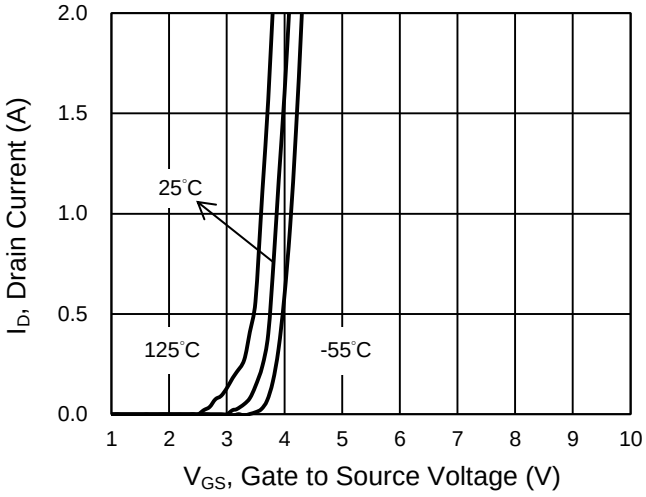
CHARACTERISTICS CURVES

(T_A = 25°C unless otherwise noted)

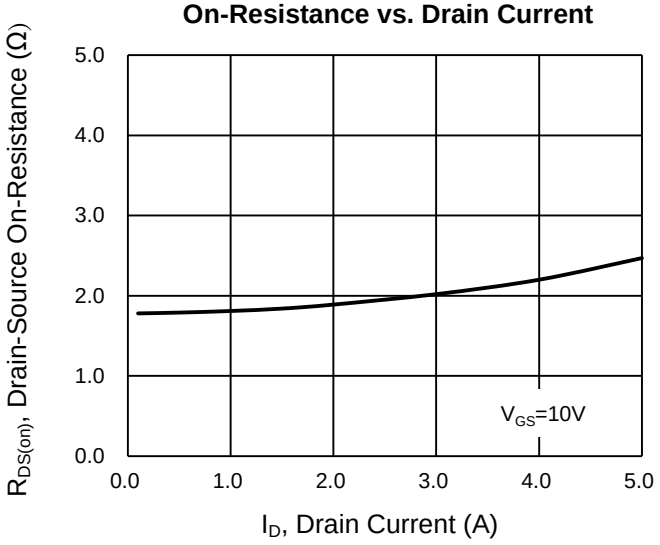
Output Characteristics



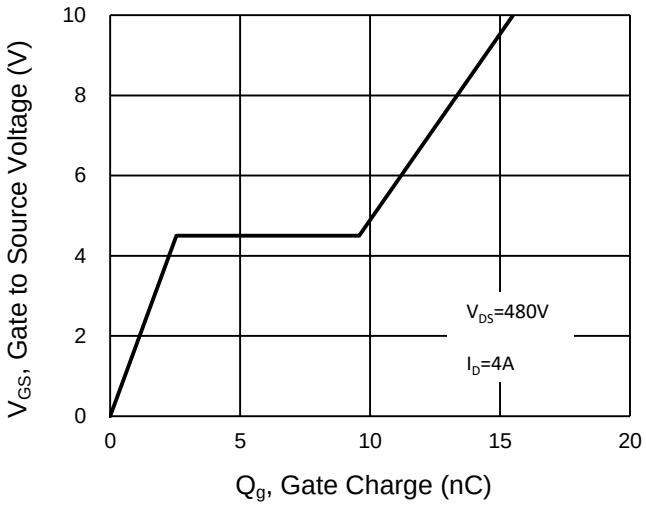
Transfer Characteristics



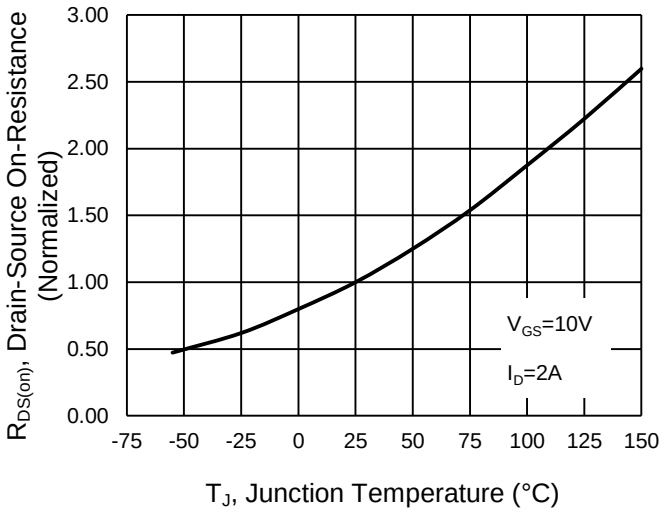
On-Resistance vs. Drain Current



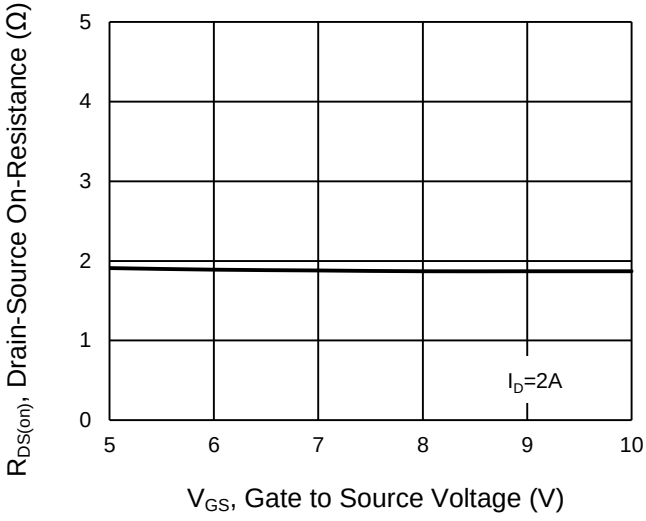
Gate-Source Voltage vs. Gate Charge



On-Resistance vs. Junction Temperature



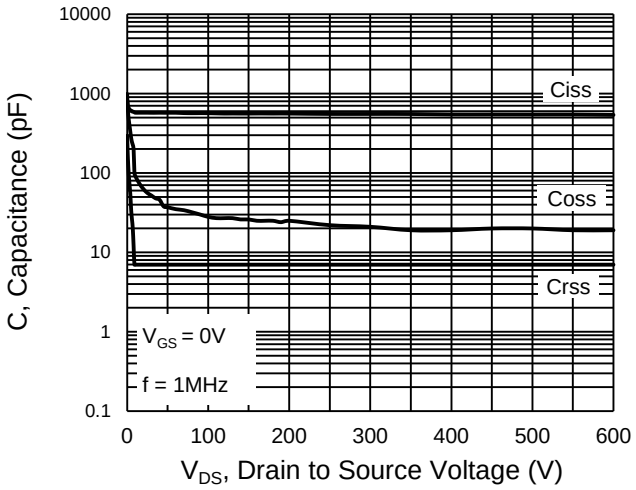
On-Resistance vs. Gate-Source Voltage



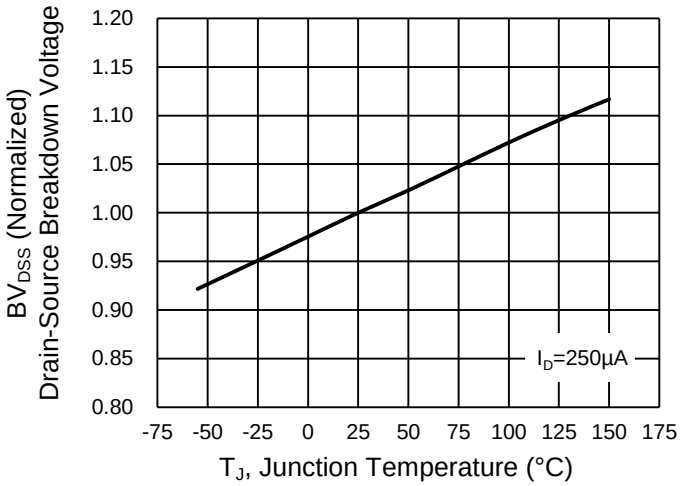
CHARACTERISTICS CURVES

(T_A = 25°C unless otherwise noted)

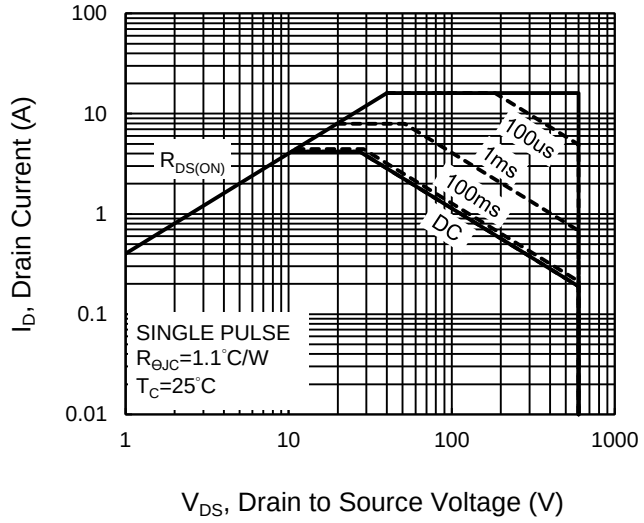
Capacitance vs. Drain-Source Voltage



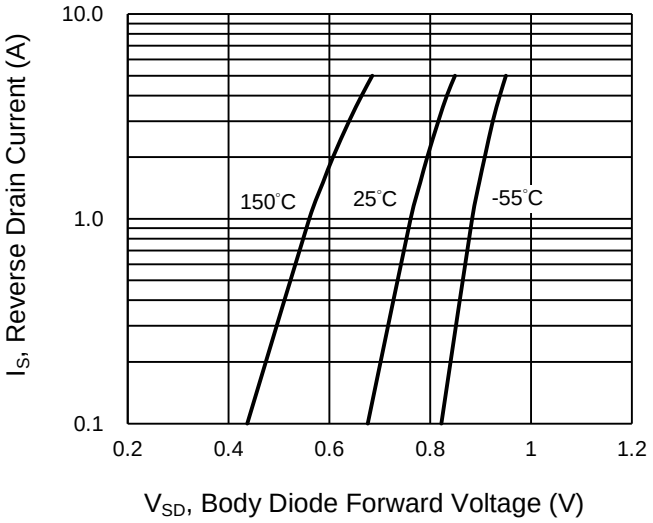
BV_{DSS} vs. Junction Temperature



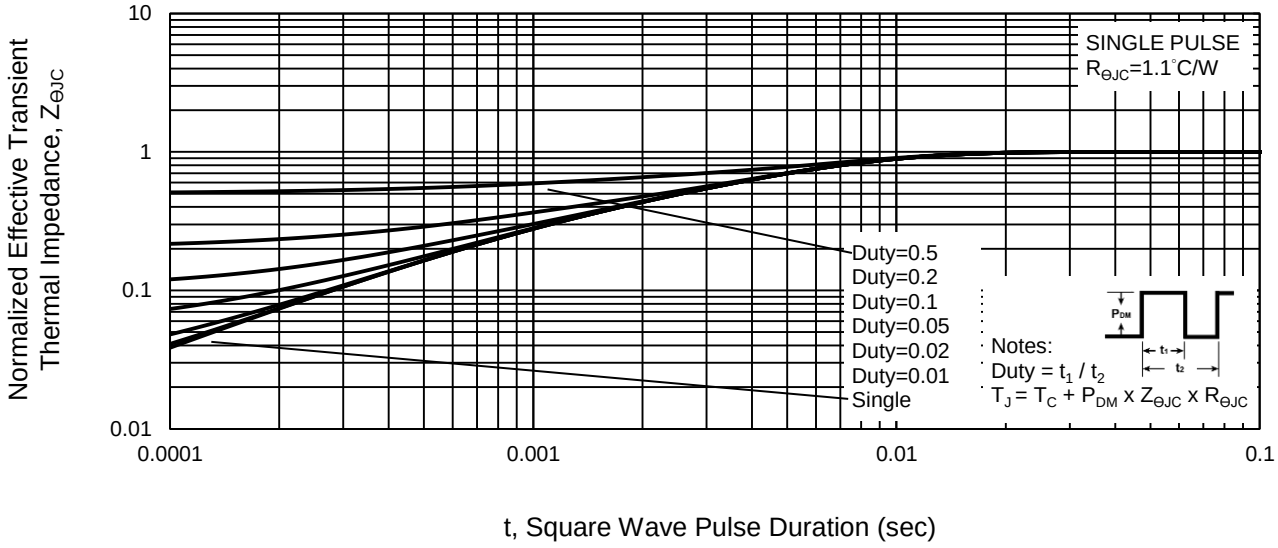
Maximum Safe Operating Area, Junction-to-Case



Source-Drain Diode Forward Current vs. Voltage



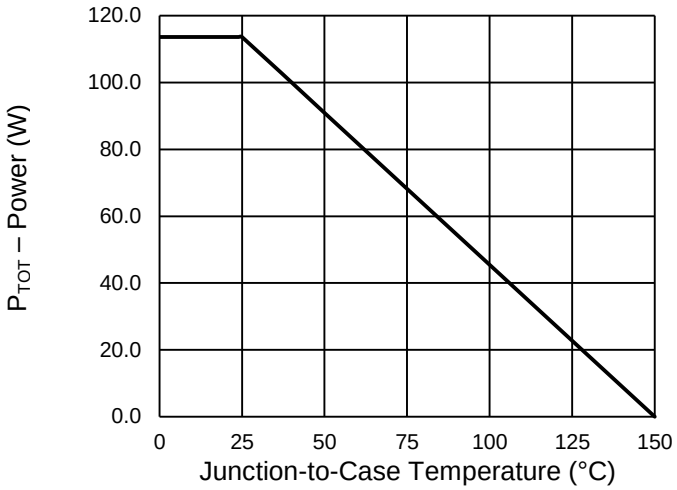
Normalized Thermal Transient Impedance, Junction-to-Case



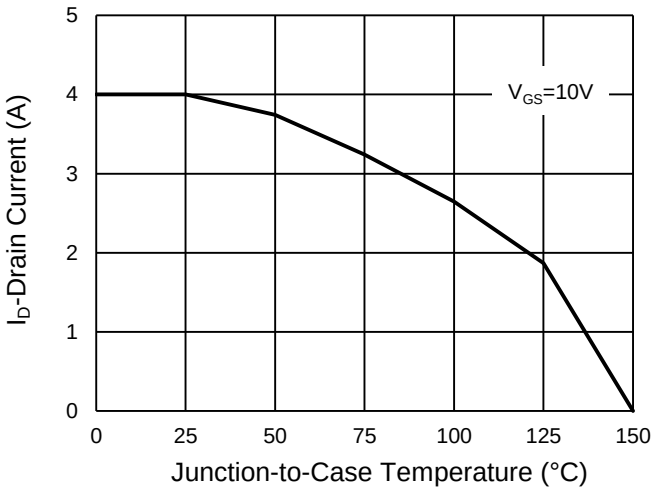
CHARACTERISTICS CURVES

(T_A = 25°C unless otherwise noted)

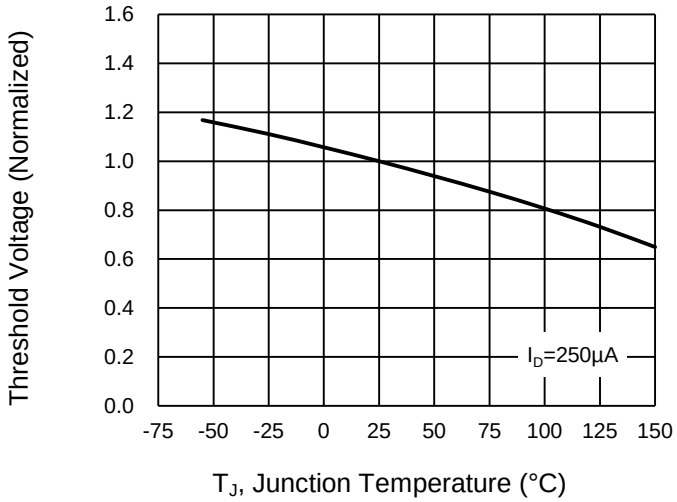
Power Dissipation



Drain Current

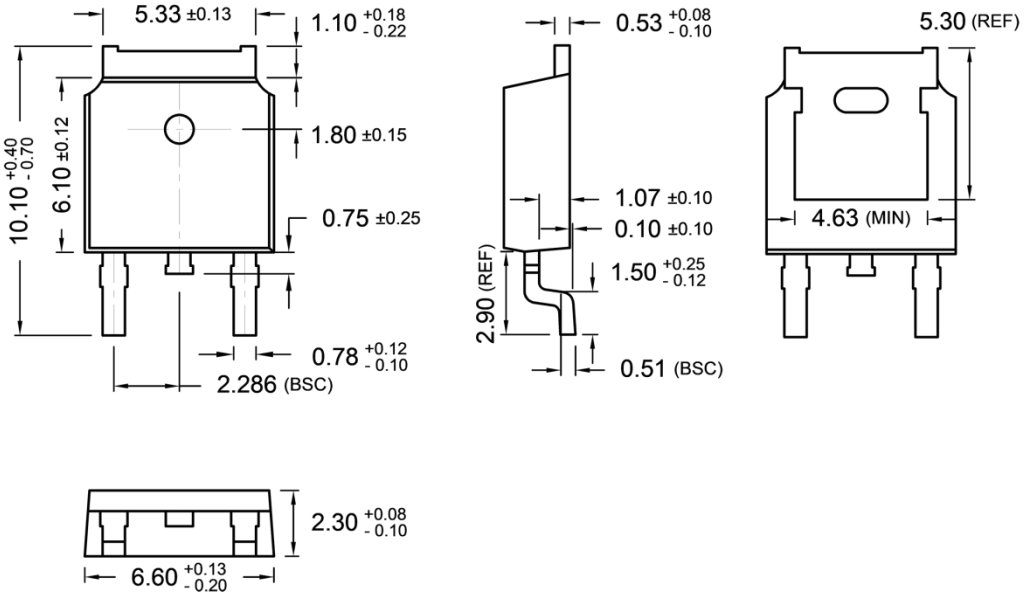


Normalized gate threshold voltage vs Temperature

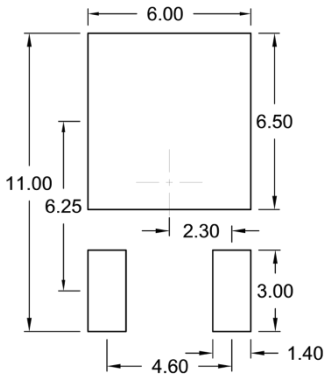


PACKAGE OUTLINE DIMENSIONS (Unit: Millimeters)

TO-252 (DPAK)



SUGGESTED PAD LAYOUT (Unit: Millimeters)



MARKING DIAGRAM



Y = Year Code

M = Month Code

O	=Jan	**P**	=Feb	**Q**	=Mar	**R**	=Apr
S	=May	**T**	=Jun	**U**	=Jul	**V**	=Aug
W	=Sep	**X**	=Oct	**Y**	=Nov	**Z**	=Dec

L = Lot Code (1~9, A~Z)

Notice

Specifications of the products displayed herein are subject to change without notice. TSC or anyone on its behalf, assumes no responsibility or liability for any errors or inaccuracies.

Purchasers are solely responsible for the choice, selection, and use of TSC products and TSC assumes no liability for application assistance or the design of Purchasers' products.

Information contained herein is intended to provide a product description only. No license, express or implied, to any intellectual property rights is granted by this document. Except as provided in TSC's terms and conditions of sale for such products, TSC assumes no liability whatsoever, and disclaims any express or implied warranty, relating to sale and/or use of TSC products including liability or warranties relating to fitness for a particular purpose, merchantability, or infringement of any patent, copyright, or other intellectual property right.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify TSC for any damages resulting from such improper use or sale.

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.