N-Channel MOSFET
100V 70A 62.5W PPAK5X6

MFT10N70P56

MERITEK

FEATURE



- Operating temperature: -55 ~ +150 °C
- $R_{DS(ON)}$=7.2mΩ at V_{GS}=10V
- $R_{DS(ON)}$=10.5mΩ at V_{GS}=4.5V
- Super high dense cell design for extremely low RDS(ON)
- High power and current handing capability
- Improved dv/dt capability

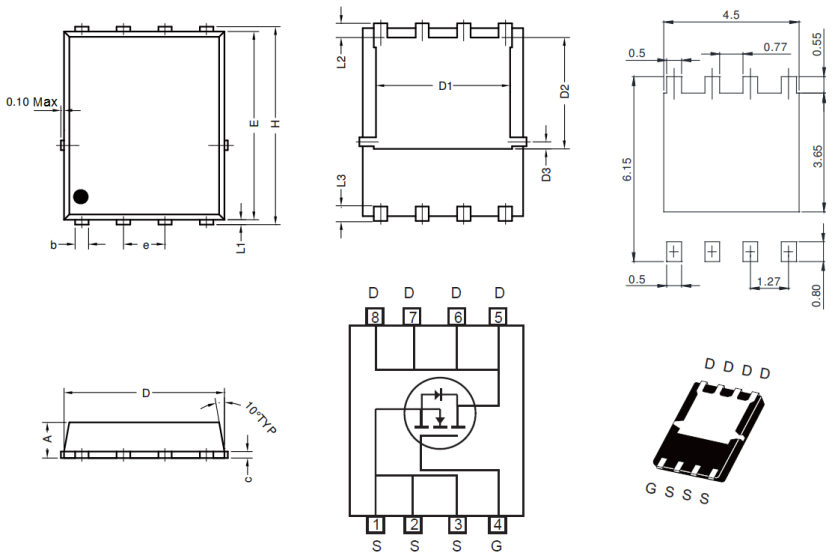
RoHS

MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	±20	V
Drain Current – Continuous	Junction to Ambien $R_{\theta JA}$	I_D	22	A
	Junction to Case $R_{\theta JC}$	I_D	70	A
Drain Current – Pulsed	Junction to Ambien $R_{\theta JA}$	I_{DM}	88	A
	Junction to Case $R_{\theta JC}$	I_{DM}	280	A
Maximum Power Dissipation		P_D	62.5	W
Single Pulsed Avalanche Energy		E_{AS}	200	mJ
Single Pulsed Avalanche Current		I_{AS}	20	A
Operating and Storage Temperature		T_J, T_{STG}	-55 to 150	°C
Thermal Resistance, Junction to Case		$R_{\theta JC}$	2	°C/W
Thermal Resistance, Junction to Ambient		$R_{\theta JA}$	20	°C/W

DIMENSIONS

Item	Min (mm)	Max (mm)
A	0.80	1.17
b	0.34	0.49
c	0.20	0.34
D	4.80	5.10
D1	3.80	4.20
D2	3.18	3.78
D3	0.15	0.36
E	5.65	5.90
e	1.27TYP	
H	5.90	6.15
L1	0.05	0.25
L2	0.38	0.62
L3	0.38	0.80

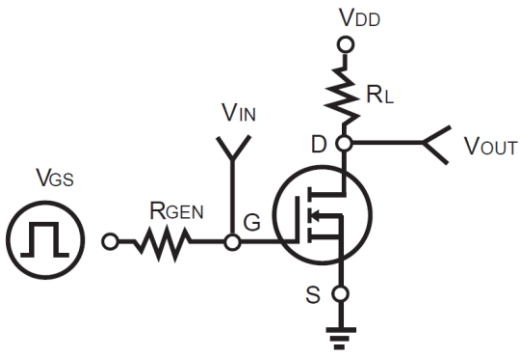


ELECTRICAL CHARACTERISTICS

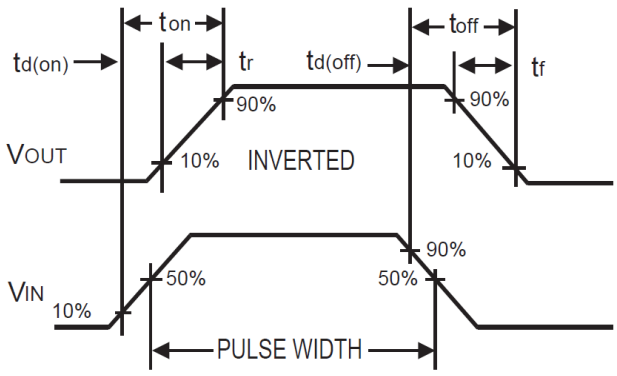
Static Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=250μA	BV_{DSS}	100	--	--	V
Gate Threshold Voltage	V_{GS}=V_{DS}, I_D=250μA	$V_{GS(th)}$	1	--	3	V
Gate Leakage Current, Forward	V_{DS}=0V , V_{GS}=20V	I_{GSSF}	--	--	100	nA
Gate Leakage Current, Reverse	V_{DS}=0V , V_{GS}=-20V	I_{GSSR}	--	--	-100	
Zero Gate Voltage Drain Current	V_{DS}=100V, V_{GS}=0V	I_{DSS}	--	--	1	μA
Drain-Source On-Resistance	V_{GS}=10V , I_D=20A	$R_{DS(ON)}$	--	6.0	7.2	Ω
Drain-Source On-Resistance	V_{GS}=4.5V , I_D=10A	$R_{DS(ON)}$	--	8.3	10.5	Ω
Dynamic Characteristics	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Total Gate Charge	V_{DS}=80V, V_{GS}=4.5V, I_D=20A	Q_g	--	22	--	nC
Gate-Source Charge		Q_{gs}	--	5	--	
Gate-Drain Charge		Q_{gd}	--	14	--	
Turn-On Delay Time	V_{DD}=80V,R_{GEN}=6Ω I_D≡20A,V_{GS}=10V	$T_{d(on)}$	--	17	--	nS
Turn-On Rise Time		T_r	--	9	--	
Turn-Off Delay Time		$T_{d(off)}$	--	54	--	
Turn-Off Fall Time		T_f	--	15	--	
Input Capacitance	V_{DS}=50V, V_{GS}=0V f=1.0MHz	C_{iss}	--	1895	--	pF
Output Capacitance		C_{oss}	--	405	--	
Reverse Transfer Capacitance		C_{rss}	--	20	--	
Drain-Source Diode Characteristics	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Drain-Source Diode Forward Current	--	I_S	--	--	40	A
Drain-Source Diode Forward Voltage	I_S=1A,V_{GS}=0V	V_{SD}	--	--	1.5	V

Note:
1. TC = 25 °C unless otherwise specified
2. Repetitive Rating, Pulse width limited by maximum junction temperature
3. Surface mounted on FR4 board, t<10 Sec
4. Pulse Test: Pulse Width≤300μS, Duty Cycle≤2%

Switching Test Circuit

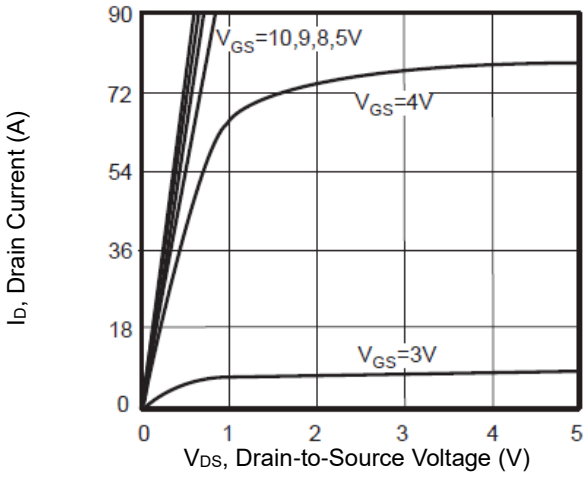


Switching Waveforms

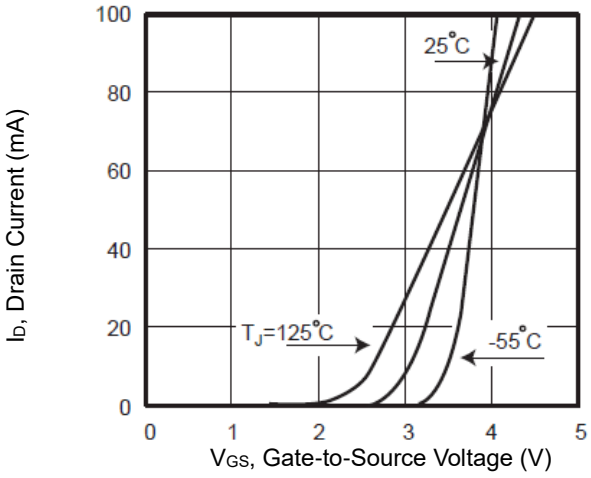


CHARACTERISTIC CURVES

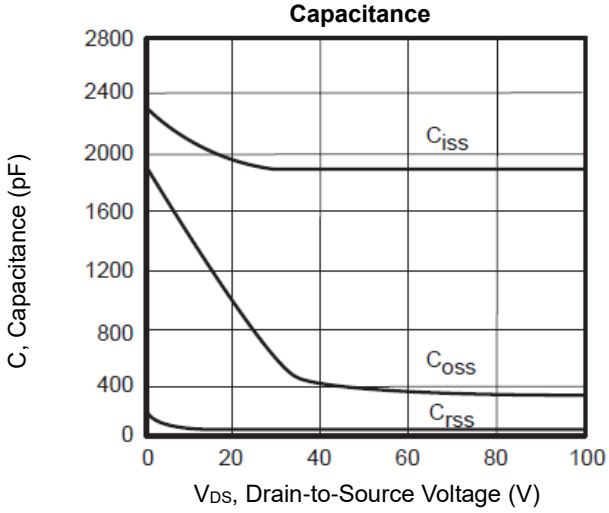
Output Characteristics



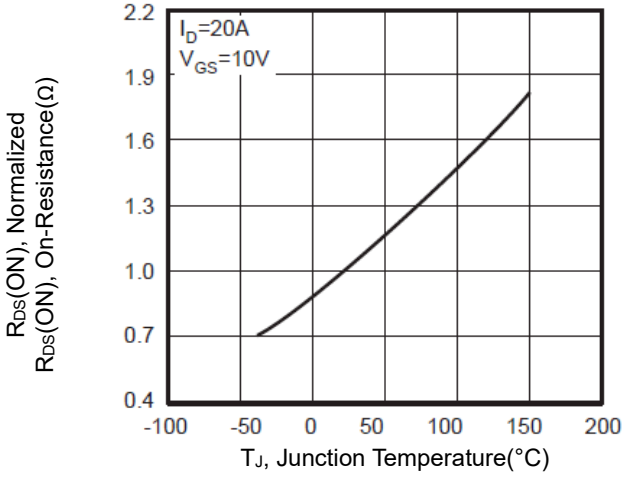
Transfer Characteristics



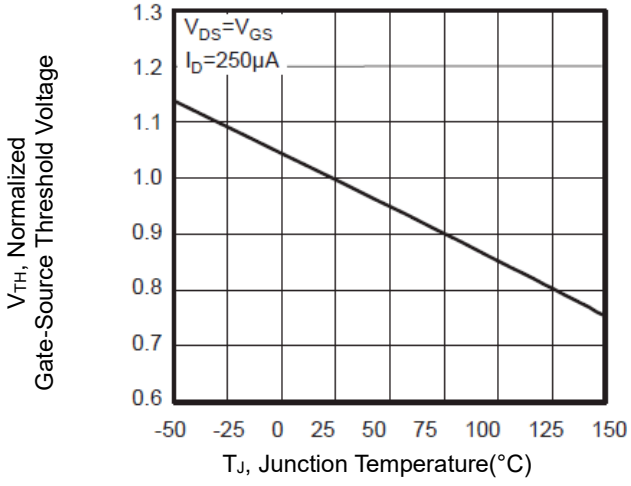
Capacitance



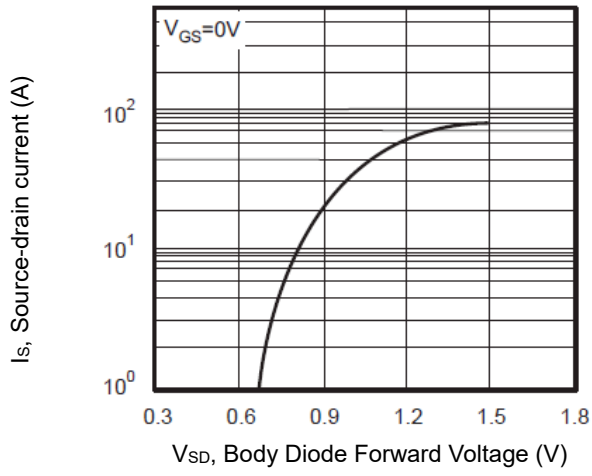
On-Resistance Variation with Temperature



Gate Threshold Variation with Temperature

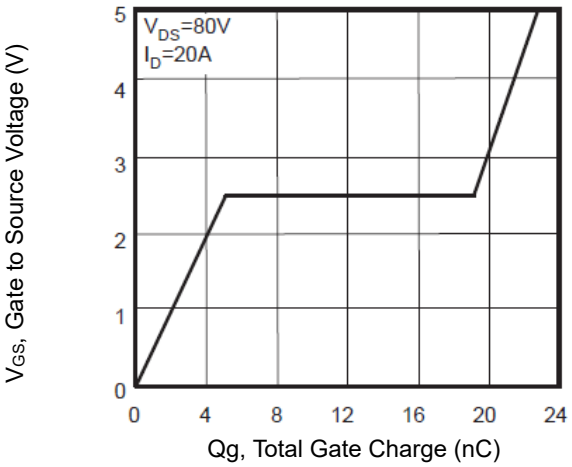


Body Diode Forward Voltage Variation with Source Current

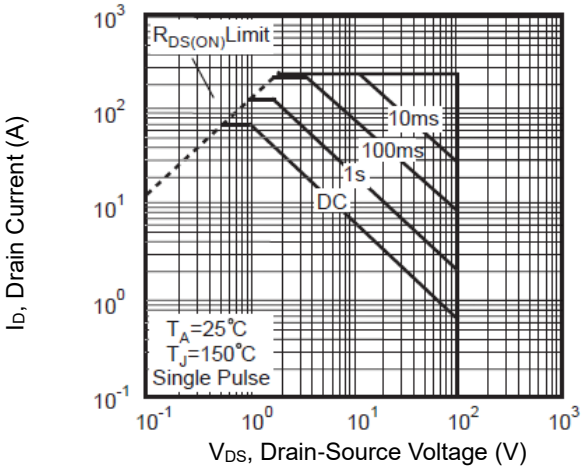


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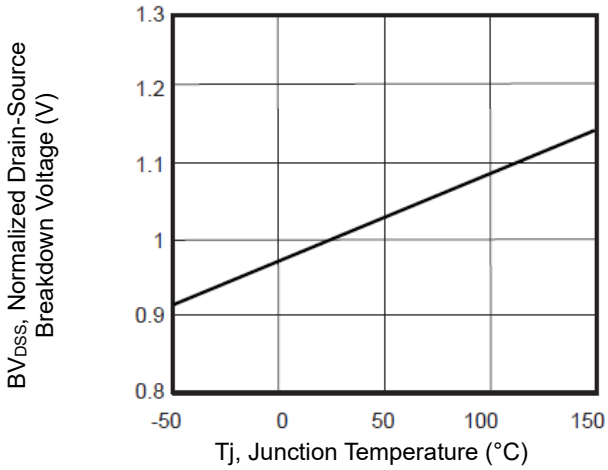
Gate Charge



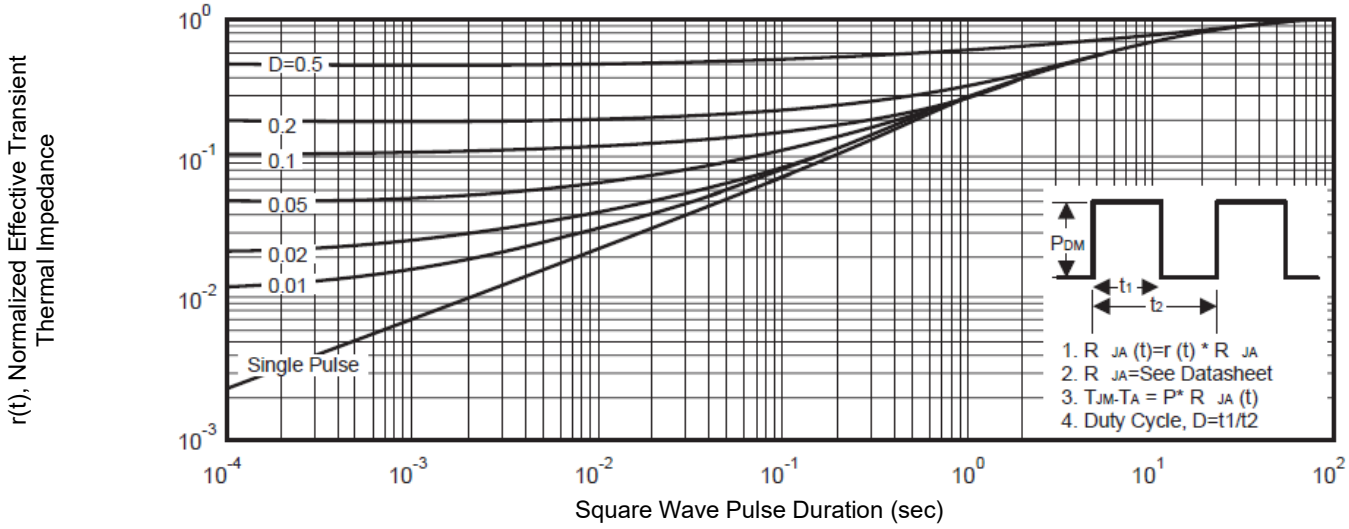
Maximum Safe Operating Area



Breakdown Voltage Variation Vs Temperature



Normalized Thermal Transient Impedance Curve, Junction-to-Ambient



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