N-Channel MOSFET
60V 86A PR-PACK5X6

MFT6N86P56

MERITEK

FEATURE

- Operating temperature: -55 ~ +150 °C
- Super high dense cell design for extremely low RDS(ON)
- High power and current handing capability
- Fast switching

RoHS

MAXIMUM RATINGS

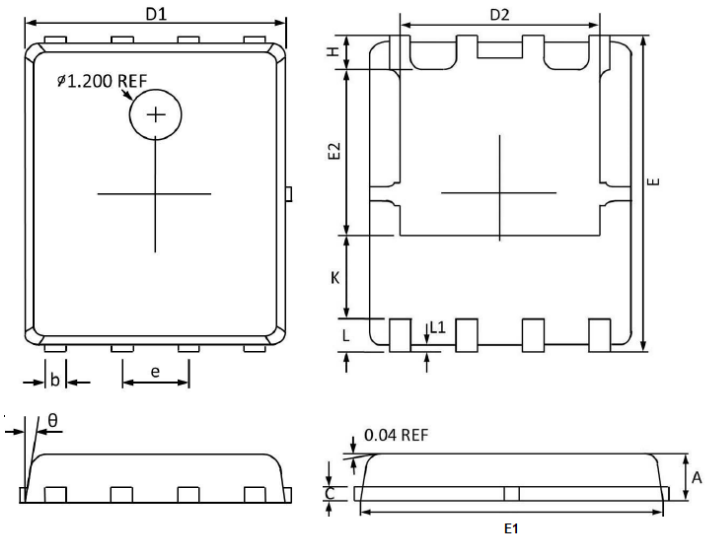
Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	±20	V
Drain Current – Continuous	T_A=25°C	I_D	23.5	A
	T_C=100°C		86	A
Drain Current – Pulsed	T_A=25°C	I_{DM}	94	A
	T_C=100°C		344	
Single Pulsed Avalanche Energy		E_{AS}	180	mJ
Single Pulsed Avalanche Current		I_{AS}	60	A
Power Dissipation		P_D	83	W
Operating Junction and Storage Temperature Range		$T_{J/STG}$	-55 to 150	°C

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	20	°C/W
Thermal Resistance Junction to Case	$R_{\theta JC}$	1.5	°C/W

DIMENSIONS

Item	Min (mm)	Max (mm)
A	0.800	1.170
b	0.340	0.510
C	0.200	0.300
D1	4.800	5.100
D2	3.610	4.100
E	5.900	6.200
E1	5.700	5.900
E2	3.350	3.780
e	1.27BSC	
H	0.410	0.700
K	1.100	1.500
L	0.510	0.710
L1	0.100	0.150



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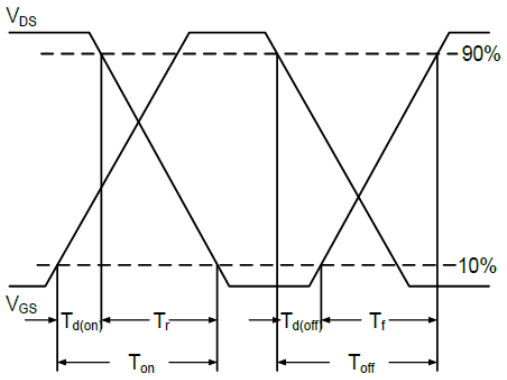
ELECTRICAL CHARACTERISTICS

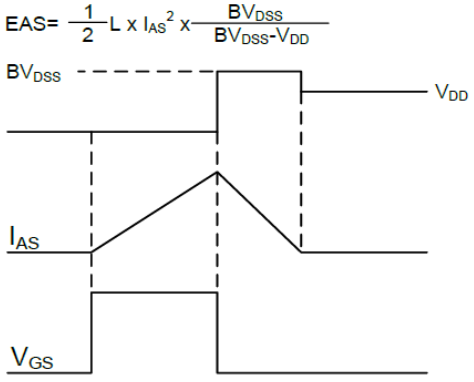
Off Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250uA	BV_{DSS}	60	--	--	V
Drain-Source Leakage Current	V_{DS}=60V, V_{GS}=0V	I_{DSS}	--	--	1	uA
Gate Source Leakage Current	V_{GS}=±20V, V_{DS}=0V	I_{GSS}	--	--	±100	nA
On Characteristics	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Static Drain-Source On-Resistance	V_{GS}=10V, I_D=20A	$R_{DS(ON)}$	--	4.5	5.6	mΩ
	V_{GS}=4.5V, I_D=15A		--	5.5	7.5	mΩ
Gate Threshold Voltage	V_{GS}=V_{DS}, I_D=250uA	$V_{GS(th)}$	1.0	--	3	V
Dynamic Characteristics	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Total Gate Charge	V_{DS}=48V, V_{GS}=4.5V, I_D=20A	Q_g	--	48	--	nC
Gate-Source Charge		Q_{gs}	--	10	--	
Gate-Drain Charge		Q_{gd}	--	30	--	
Turn-On Delay Time	V_{DD}=48V, I_D=50A V_{GS}=4.5V, R_{GEN}=3.6Ω	$T_{d(on)}$	--	37	--	nS
Rise Time		T_r	--	38	--	
Turn-Off Delay Time		$T_{d(off)}$	--	49	--	
Fall Time		T_f	--	30	--	
Input Capacitance	V_{DS}=25V, V_{GS}=0V F=1.0MHz	C_{iss}	--	3520	--	pF
Output Capacitance		C_{oss}	--	360	--	
Reverse Transfer Capacitance		C_{rss}	--	225	--	
Gate resistance	V_{GS}=0V, V_{DS}=0V, F=1MHz	R_g	--	2.7	--	Ω
Drain-Souse Body Diode	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Continuous Source Current	VG=VD=0V , Force Current	I_S	--	--	80	A
Drain-Source Diode Forward Voltage	VGS=0V , I_S=20A	V_{SD}	--	--	1	V

Note:
1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. V_{DD}=25V,R_G=25Ω,L=0.1mH,I_{AS}=60A., Starting TJ=25℃
3. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%.
4. Essentially independent of operating temperature
5. Surface Mounted on FR4 Board t<=10sec.

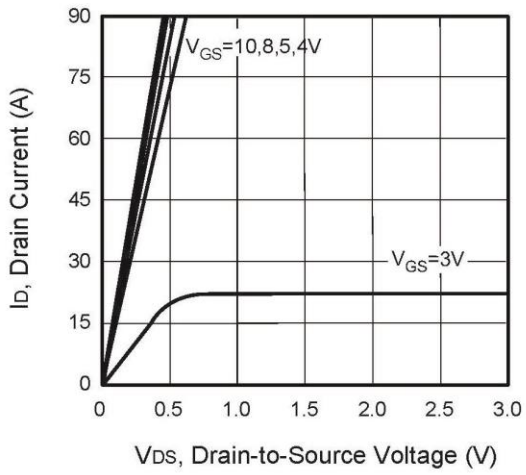
Switching Time Waveform



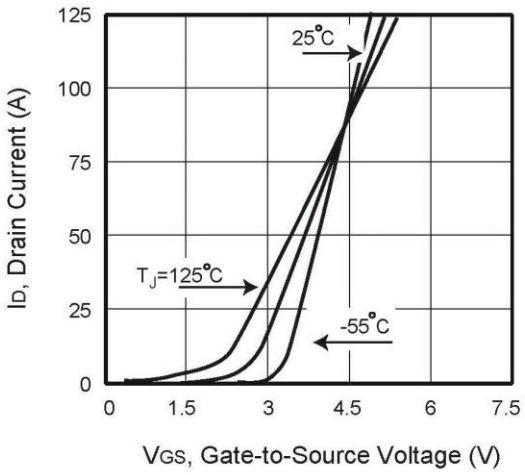
EAS Waveform



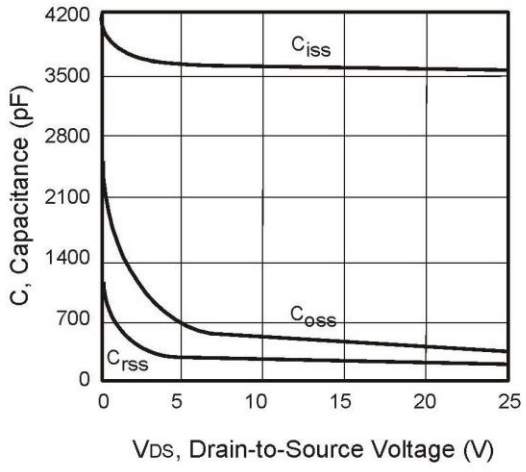
CHARACTERISTIC CURVES



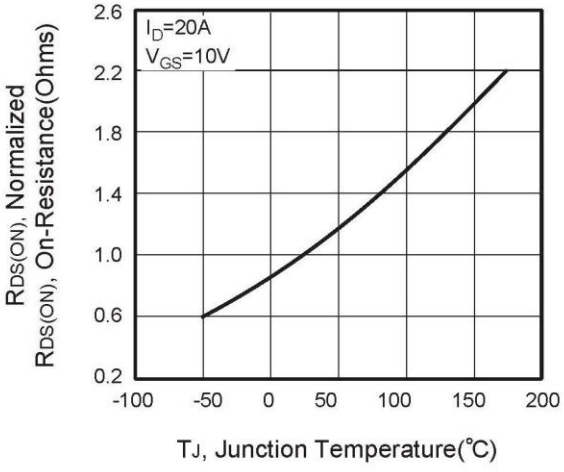
Output Characteristics



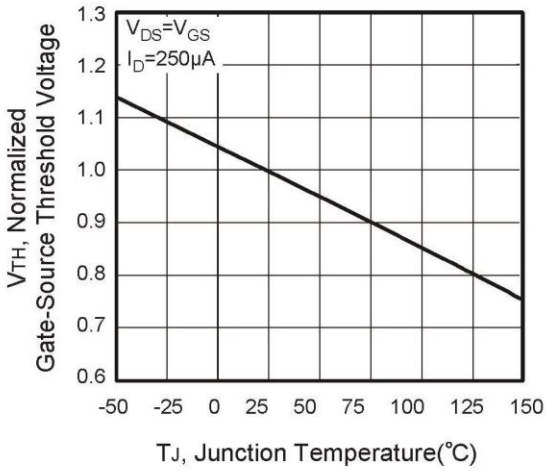
Transfer Characteristics



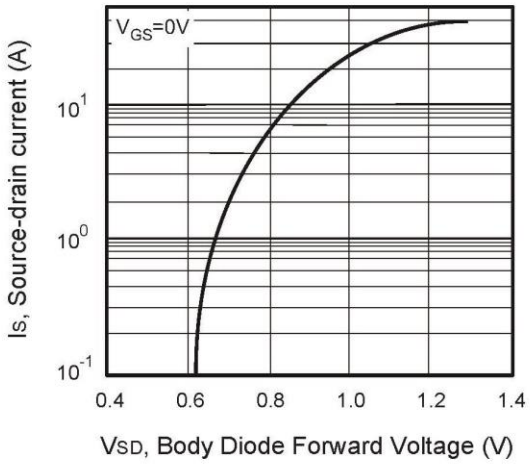
Capacitance



On-Resistance Variation with Temperature

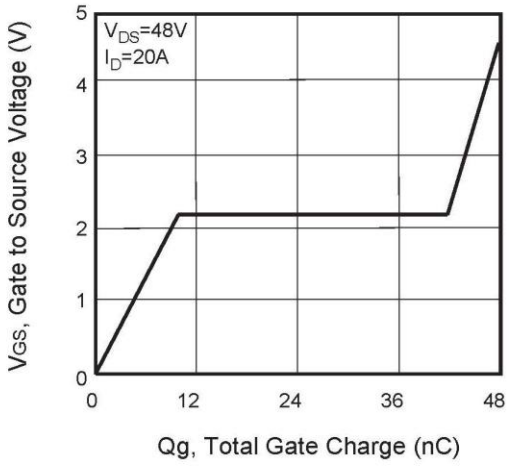


Gate Threshold Variation with Temperature

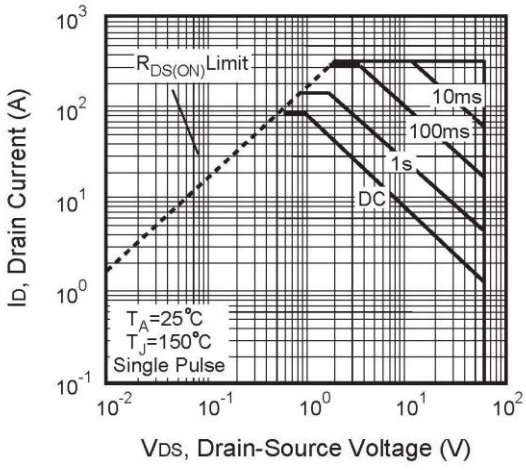


Body Diode Forward Voltage Variation with Source Current

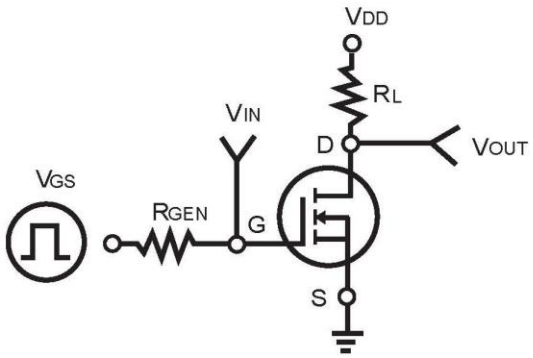
CHARACTERISTIC CURVES



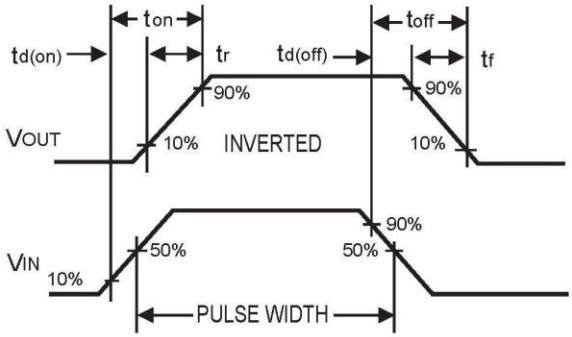
Gate Charge



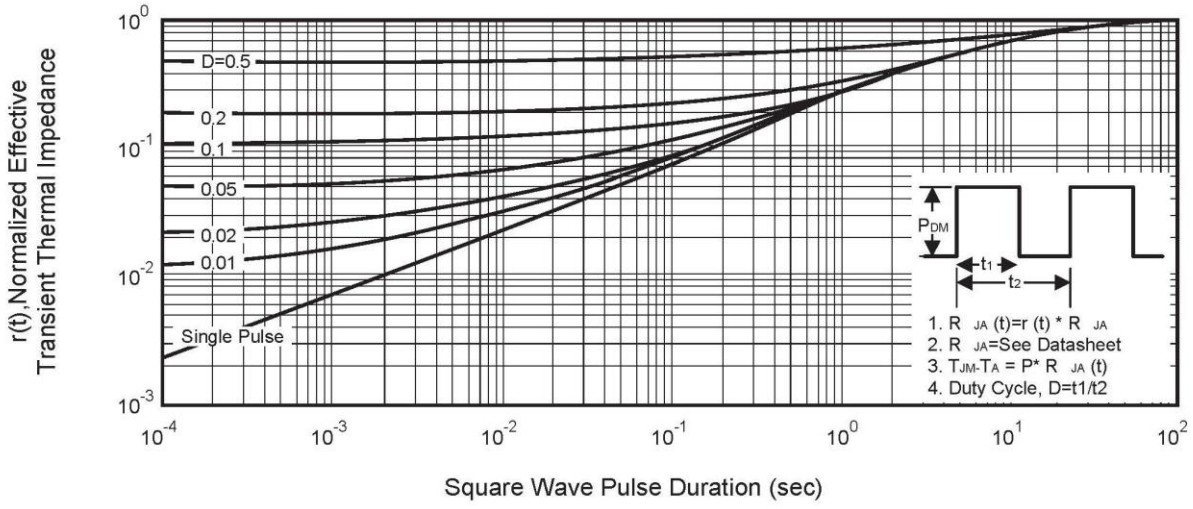
Maximum Safe Operating Area



Switching Test Circuit



Switching Waveforms



Normalized Thermal Transient Impedance Curve

*Specifications subject to change without notice.