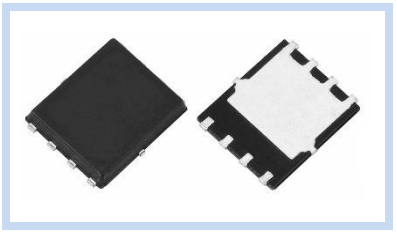
P-Channel MOSFET
30V 30A 27W DFN3×3

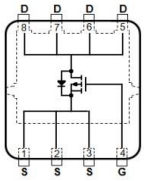
MFT3P30D33

MERITEK

FEATURE



- $R_{DS(ON)}$<20mΩ, V_{GS}=-10V, I_D=-8A
- $R_{DS(ON)}$<32mΩ, V_{GS}=-4.5V, I_D=-6A
- Super High Dense Cell Design for Extremely Low $R_{DS(ON)}$.
- Low Reverse Transfer Capacitance
- Low Gate Charge
- Improved dv/dt Capability



RoHS

MECHANICAL DATA

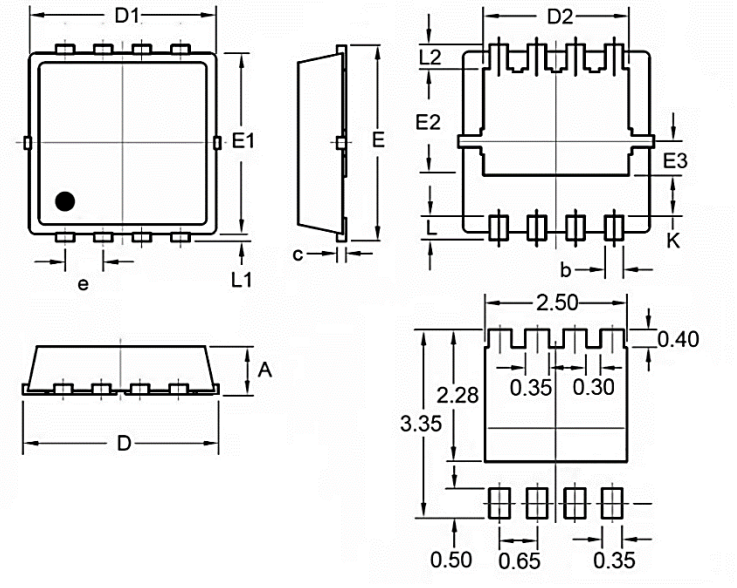
- Case: DFN3×3-8L Package
- Terminals: Solderable per MIL-STD-750, Method 2026

MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	-30	V
Gate-Source Voltage		V_{GS}	±20	V
Drain Current – Continuous	T_C=25°C	I_D	-30	A
	T_C=100°C		-19	A
Drain Current – Pulsed	T_C=25°C	I_{DM}	-120	A
Power Dissipation	T_C=25°C	P_D	27	W
	T_C=100°C		11	W
Drain Current – Continuous	T_A=25°C	I_D	-8.5	A
	T_A=70°C		-6.9	A
Power Dissipation	T_A=25°C	P_D	2.0	W
	T_A=70°C		1.3	W
Thermal Resistance Junction to Case		$R_{\theta JC}$	4.6	°C/W
Thermal Resistance Junction to Ambient		$R_{\theta JA}$	62.5	°C/W
Operating Junction and Storage Temperature		T_J, T_{STG}	-55 to +150	°C

DIMENSIONS

Item	Min. (mm)	Max. (mm)
A	0.70	0.88
b	0.25	0.35
c	0.10	0.25
D	3.20	3.30
D1	3.00	3.20
D2	-	2.59
E	3.20	3.30
E1	3.00	3.20
E2	-	1.98
E3	0.37	0.77
e	0.65(BSC)	
K	0.50	0.89
L	0.30	0.56
L1	0.06	0.30
L2	0.30	0.56



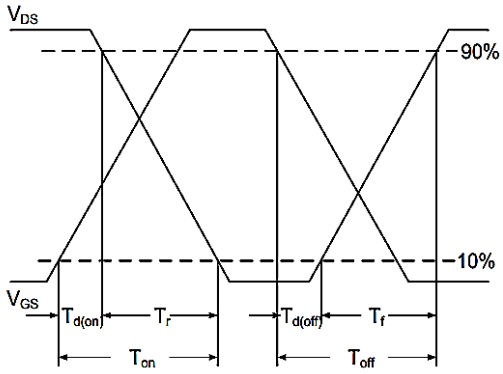
ELECTRICAL CHARACTERISTICS

Off Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=-250μA	BV_{DSS}	-30	--	--	V
Drain-Source Leakage Current	V_{DS}=-30V, V_{GS}=0V,	I_{DSS}	--	--	-1	μA
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=-8A	$R_{DS(ON)}$	--	17	20	mΩ
	V_{GS}=-4.5V, I_D=-6A		--	26	32	mΩ
Gate Threshold Voltage	V_{GS}=V_{DS} , I_D=-250μA	$V_{GS(th)}$	-1	-1.5	-2.5	V
Dynamic Characteristics	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Total Gate Charge	V_{DS}=-15V, V_{GS}=-4.5V, I_D=-5A	Q_g	--	11	--	nC
Gate-Source Charge		Q_{gs}	--	3.2	--	nC
Gate-Drain Charge		Q_{gd}	--	3.9	--	nC
Turn-On Delay Time	V_{DS}=-15V, V_{GS}=-10V, R_G=6Ω, I_D=-1A	$T_{d(on)}$	--	5.9	--	nS
Rise Time		T_r	--	33	--	nS
Turn-Off Delay Time		$T_{d(off)}$	--	55	--	nS
Fall Time		T_f	--	34	--	nS
Input Capacitance	V_{DS}=-15V , V_{GS}=0V , F=1MHz	C_{iss}	--	1169	--	pF
Output Capacitance		C_{oss}	--	180	--	pF
Reverse Transfer Capacitance		C_{rss}	--	132	--	pF
Drain-Source Body Diode	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Diode Forward Current	--	I_S	--	--	-30	A
Diode Forward Voltage	V_{GS}=0V , I_S=1A	V_{SD}	--	-0.73	-1	V

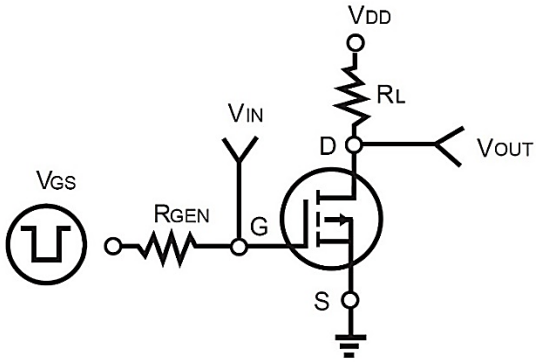
Note:

1. Pulse width≤300μs, duty cycle≤2%
2. Guaranteed by design,not subject to production testing
3. The maximum current rating is package limited
4. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=150°C. Ratings are based on low frequency and duty cycles to keep initial T_J=25°C.
5. $R_{\Theta JA}$ is the sum of the junction-to-case and case-to-ambient thermal resistance
   where the case thermal reference is defined as the solder mounting surface of the drain pins. Mounted on a I inch^2 with 2oz square pad of copper.
6. Essentially independent of operating temperature typical characteristics.

Switching Time Waveform

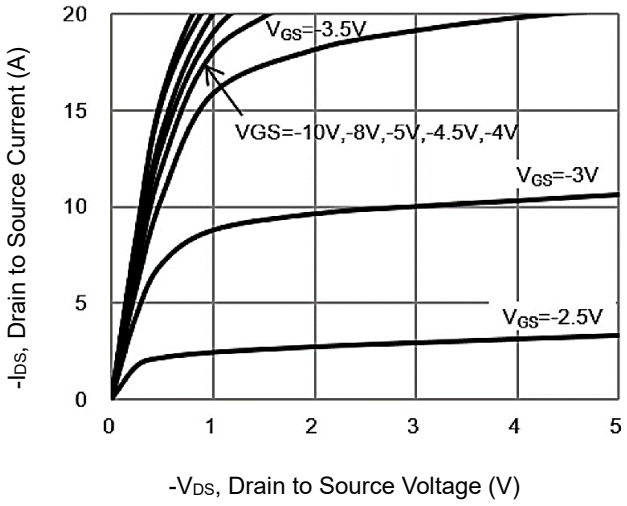


Switching Test Circuit

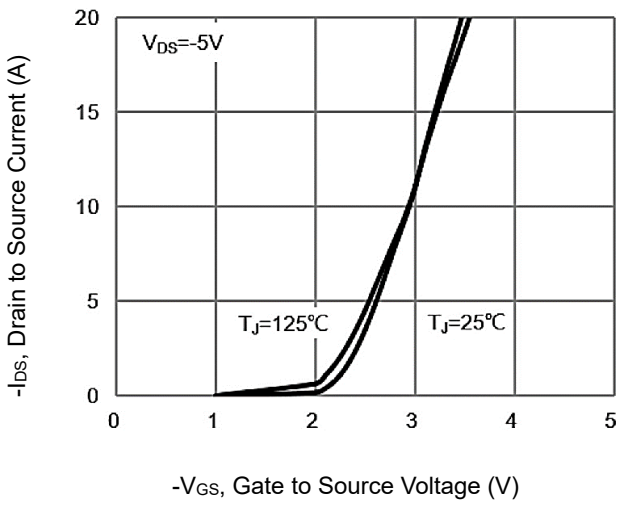


CHARACTERISTIC CURVES

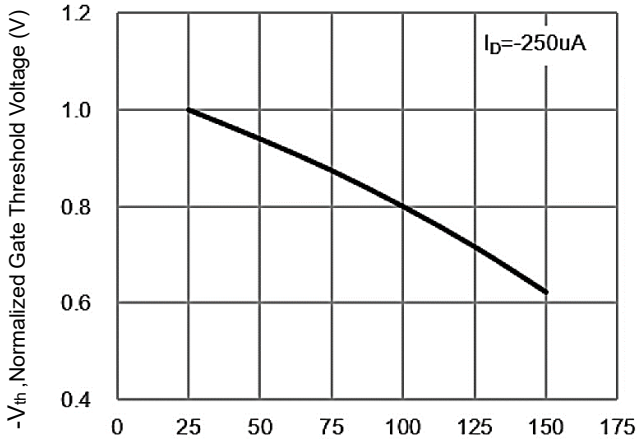
On-Region Characteristics



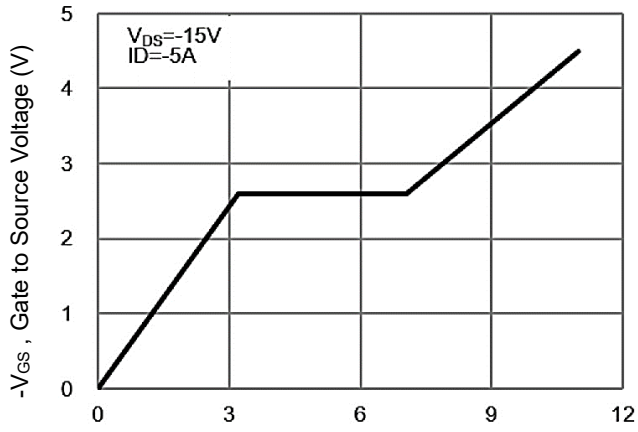
Transfer Characteristics



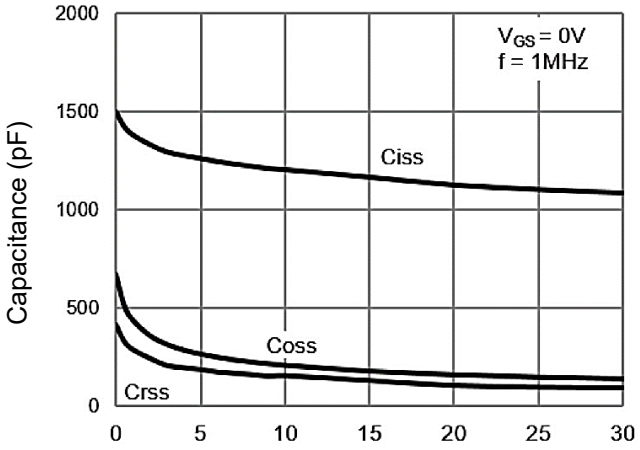
Normalized V_{th} vs. T_J



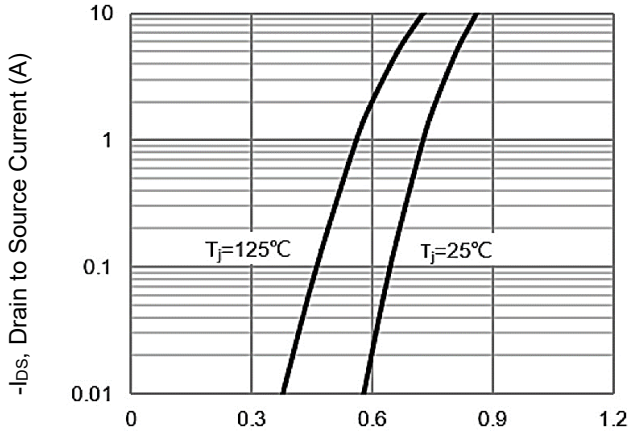
Gate Charge Waveform



Capacitance vs. Drain-Source Voltage

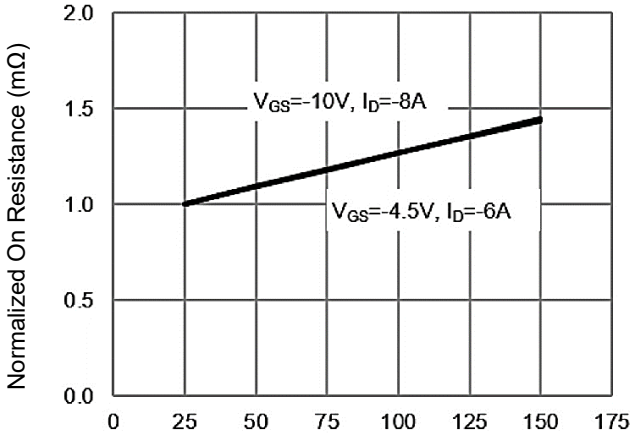


Body Diode Forward Voltage

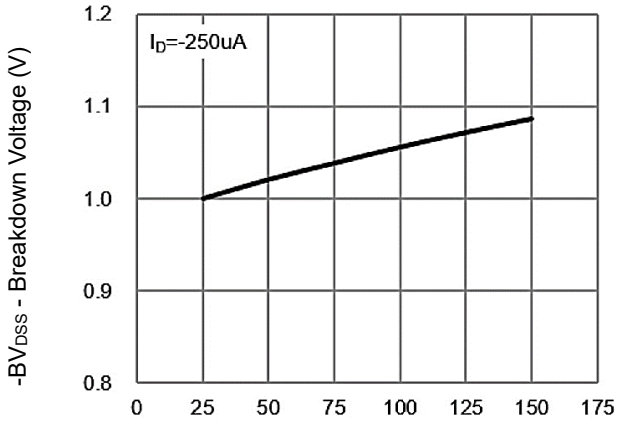


CHARACTERISTIC CURVES

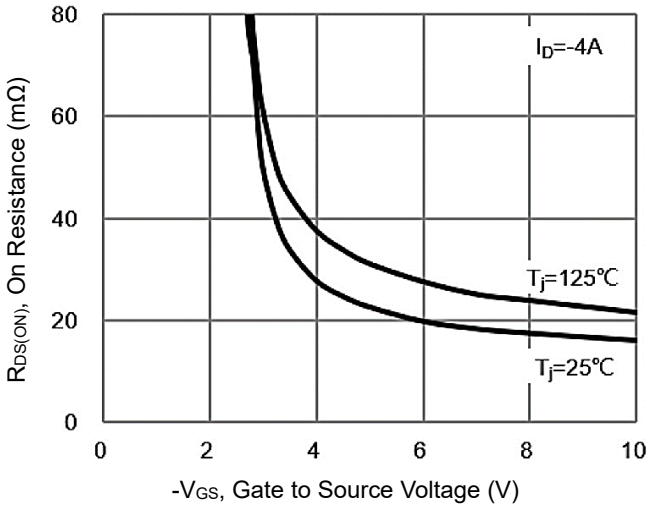
On-Resistance vs Junction Temperature



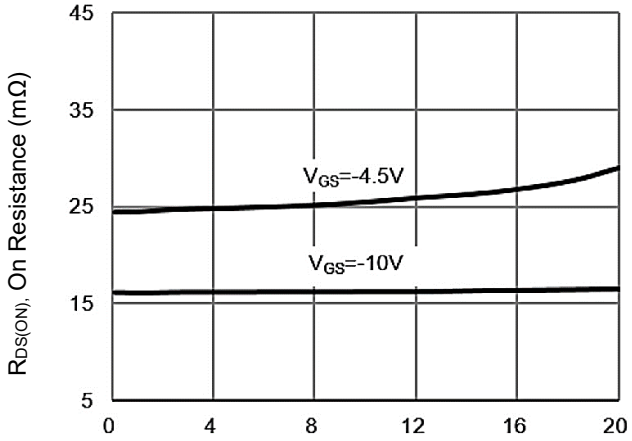
Breakdown Voltage vs Temperature



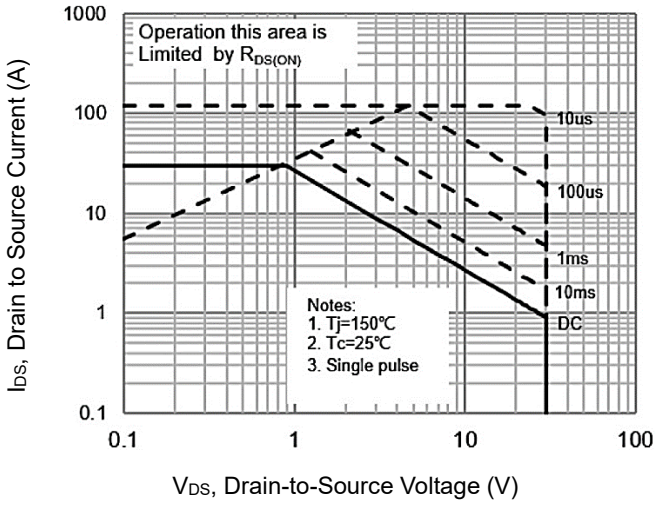
On-Resistance Variation with V_{GS}



On-Resistance vs. Drain Current

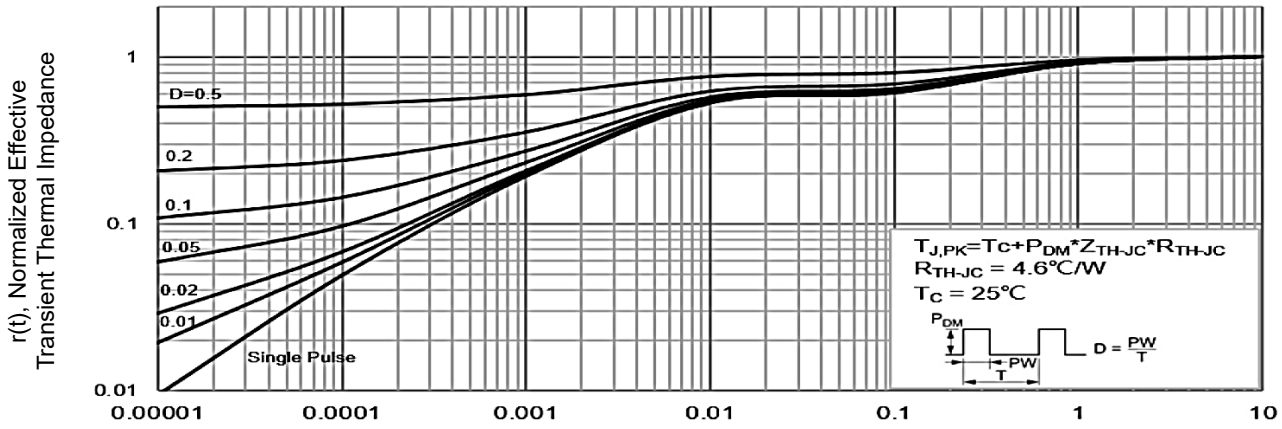


Maximum Safe Operating Area



CHARACTERISTIC CURVES

Normalized Transient Thermal Impedance Curves



Square Wave Pulse Duration (s)