

# P-Channel MOSFET

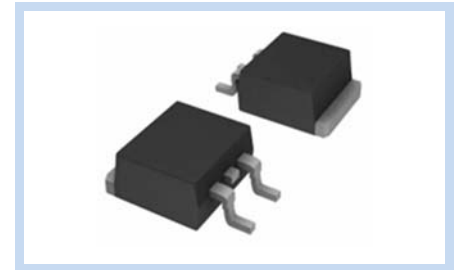
## 100V 32A 125W TO-263

MFT10P32T263

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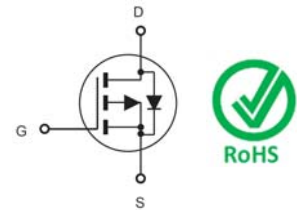
### FEATURE

- $R_{DS(ON)} < 76m\Omega$ ,  $V_{GS} = -10V$ ,  $I_D = -16A$
- $R_{DS(ON)} < 92m\Omega$ ,  $V_{GS} = -4.5V$ ,  $I_D = -8.0A$
- Super high density cell design for low on state resistance
- High power and current handling capability



### MECHANICAL DATA

- Case: TO-263 package
- Terminals: Solderable per MIL-STD-750, Method 2026

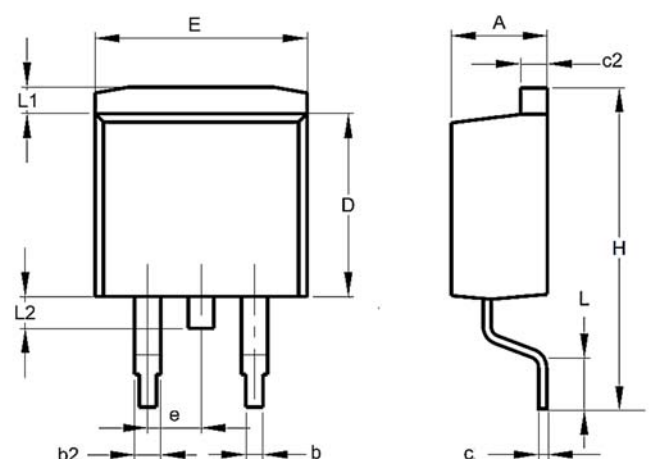


### MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	-100	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Drain Current – Continuous	$I_D$	-32	A
Drain Current – Pulsed	$I_{DM}$	-128	A
Power Dissipation, $T_c = 25^\circ C$	$P_D$	125	W
Power Dissipation, Derate above $25^\circ C$		0.83	W/ $^\circ C$
Single Pulsed Avalanche Energy	$E_{AS}$	450	mJ
Single Pulsed Avalanche Current	$I_{AS}$	30	A
Thermal Resistance, Junction to Case	$R_{\theta JC}$	1.2	$^\circ C/W$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	62.5	$^\circ C/W$
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to 175	$^\circ C$

### DIMENSIONS

Item	Min (mm)	Max (mm)
A	4.290	4.700
b	0.690	0.940
b2	1.220	1.400
c	0.360	0.560
c2	1.220	1.400
D	8.640	9.650
E	9.700	10.540
e	2.290	2.790
H	14.610	15.880
L	2.240	2.820
L1	--	1.400
L2	1.190	1.780



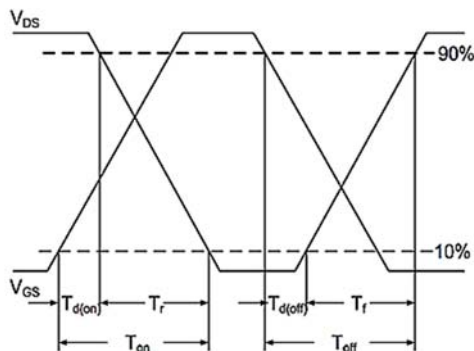
**ELECTRICAL CHARACTERISTICS**

Static Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	$BV_{DSS}$	-100	--	--	V
Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=-100\mu A$	$V_{GS(th)}$	-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	$\mu A$
Drain-Source On-Resistance	$V_{GS}=-10V, I_D=-16A$	$R_{DS(ON)}$	--	63	76	$m\Omega$
	$V_{GS}=-4.5V, I_D=-8A$		--	72	92	$m\Omega$
Dynamic Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Total Gate Charge	$V_{DS}=-80V, V_{GS}=-10V, I_D=-18A$	$Q_g$	--	75	--	nC
Gate-Source Charge		$Q_{gs}$	--	9	--	
Gate-Drain Charge		$Q_{gd}$	--	18	--	
Turn-On Delay Time	$V_{DD}=-50V, R_{GEN}=3.3\Omega, I_D=-18A, V_{GS}=-10V$	$T_{d(on)}$	--	17	--	nS
Rise Time		$T_r$	--	6	--	
Turn-Off Delay Time		$T_{d(off)}$	--	75	--	
Fall Time		$T_f$	--	10	--	
Input Capacitance	$V_{DS}=-25V, V_{GS}=0V, F=1.0MHz$	$C_{iss}$	--	2590	--	pF
Output Capacitance		$C_{oss}$	--	320	--	
Reverse Transfer Capacitance		$C_{rss}$	--	45	--	
Drain-Source Diode Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Drain-Source Diode Forward Current	--	$I_S$	--	--	-32	A
Drain-Source Diode Forward Voltage	$I_S=-16A, V_{GS}=0V$	$V_{SD}$	--	--	-1.2	V

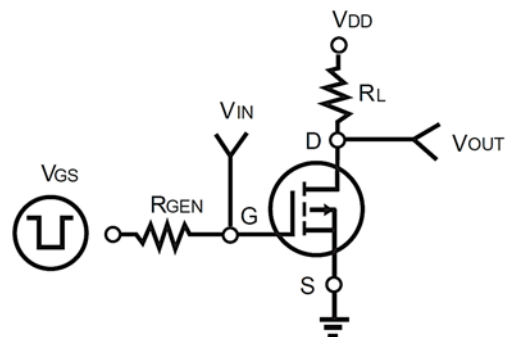
Note:

1.  $T_C = 25\text{ }^\circ C$  unless otherwise noted
2. Repetitive Rating : Pulse width limited by maximum junction temperature
3. Surface Mounted on FR4 Board,  $t \leq 10$  sec.
4. Pulse Test : Pulse Width  $< 300\mu s$ , Duty Cycle  $< 2\%$
5. Guaranteed by design, not subject to production testing.
6.  $L=1mH, I_{AS}=30A, V_{DD}=25V, R_G=25\Omega, \text{Staring } T_J=25C$

**Switching Time Waveform**



**Switching Test Circuit**



**CHARACTERISTIC CURVES**

Output Characteristics

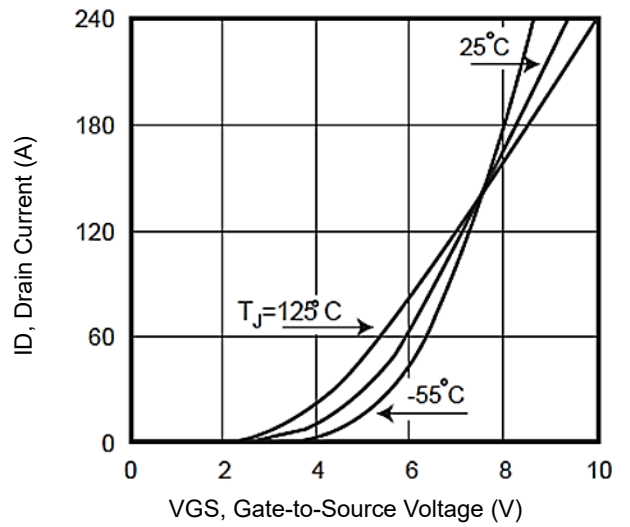
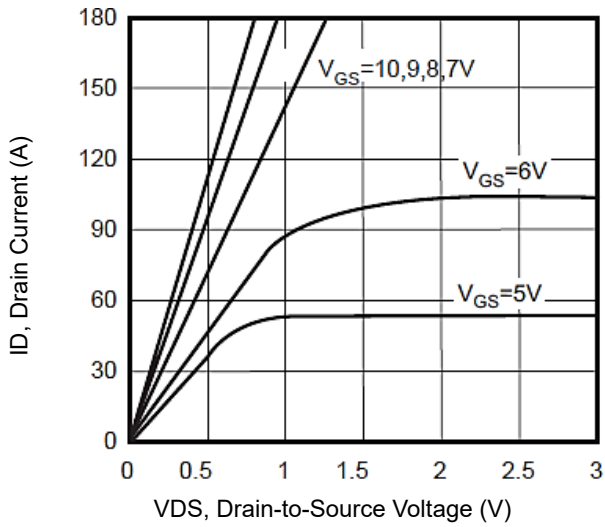
Transfer Characteristics

# P-Channel MOSFET

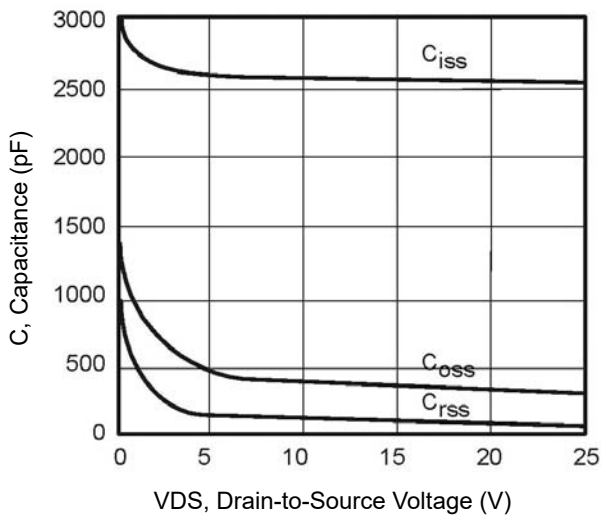
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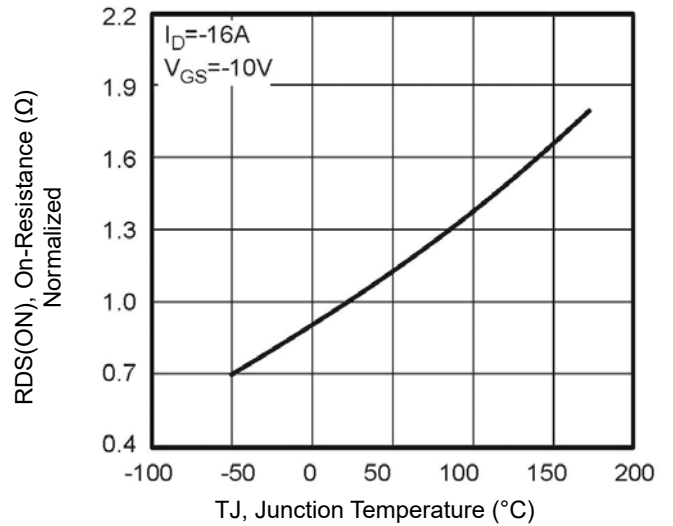
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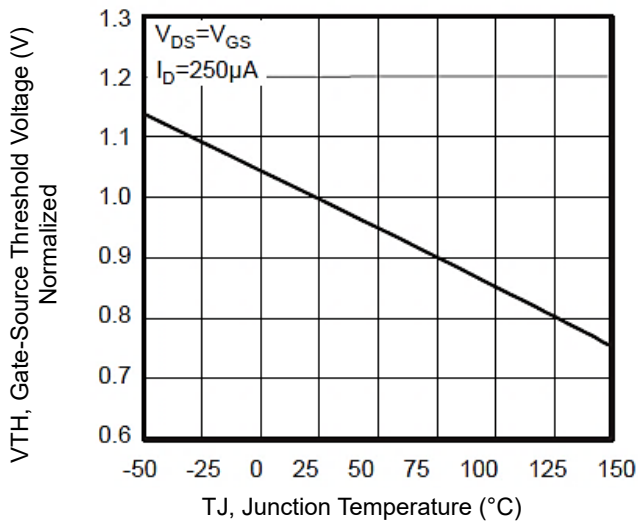
Capacitance



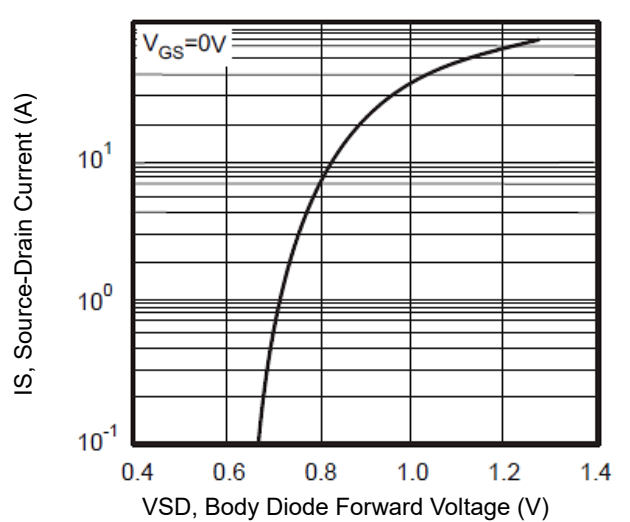
On-Resistance vs.  $T_J$



Gate Threshold Variation vs.  $T_J$

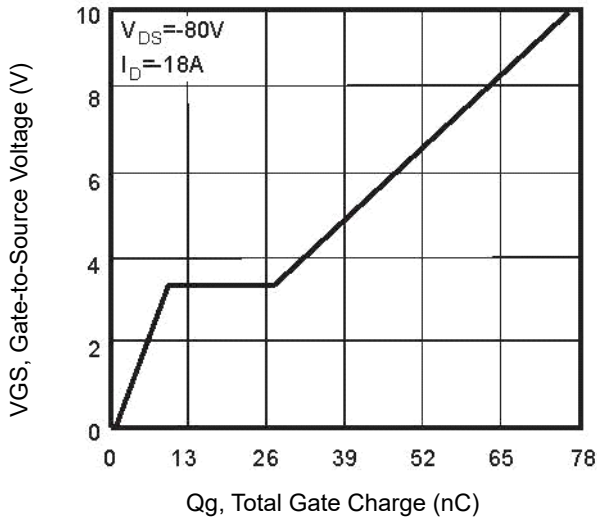


Body Diode Forward Voltage Variation vs.  $I_S$

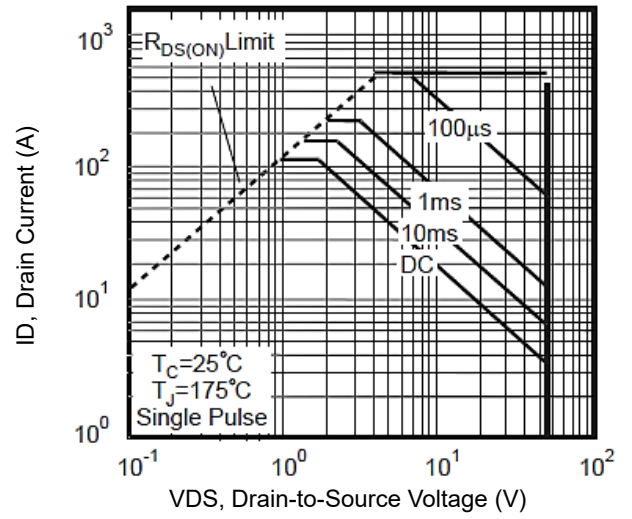


**CHARACTERISTIC CURVES**

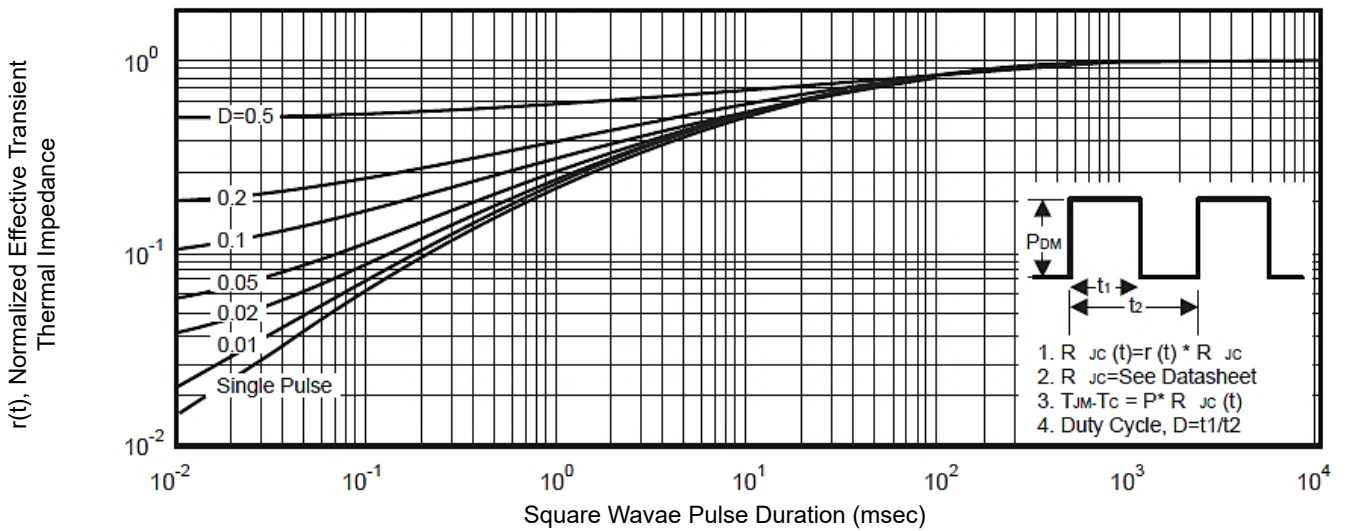
**Gate Charge**



**Maximum Safe Operating Area**



**Normalized Thermal Transient Impedance Curve**



\*Specifications subject to change without notice.