

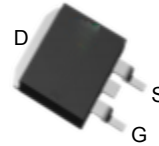
Features

- -60V/-90A,
 $R_{DS(ON)} = 8.5m\Omega(\text{typ.}) @ V_{GS} = -10V$
 $R_{DS(ON)} = 9.5m\Omega(\text{typ.}) @ V_{GS} = -4.5V$
- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)
- 100% UIS Tested

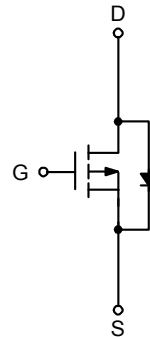
Applications

- Power Management in Desktop Computer or DC/ DC Converters

Pin Description



Top View of TO-263



P-Channel MOSFET

Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$ Unless Otherwise Noted)

Symbol	Parameter		Rating	Unit
Common Ratings				
V _{DSS}	Drain-Source Voltage		-60	V
V _{GSS}	Gate-Source Voltage		±25	
T _J	Maximum Junction Temperature		150	°C
T _{STG}	Storage Temperature Range		-55 to 150	°C
I _S	Diode Continuous Forward Current		-90	A
I _{AS} ^a	Avalanche Current, Single pulse	L=1mH	-30	A
E _{AS} ^a	Avalanche Energy, Single pulse	L=1mH	450	mJ
I _{DP}	Pulse Drain Current Tested	T _C =25°C	-180	A
I _D	Continuous Drain Current	T _C =25°C	-90	
		T _C =100°C	-36	
P _D	Maximum Power Dissipation	T _C =25°C	132	W
		T _C =100°C	53	
R _{θJC}	Thermal Resistance-Junction to Case		0.95	°C/W
R _{θJA}	Thermal Resistance-Junction to Ambient		62.5	

Note * : Current limited by bond wire.

Note a : UIS tested and pulse width limited by maximum junction temperature 150°C (initial temperature $T_J=25^\circ\text{C}$).

Electrical Characteristics (T_A = 25°C Unless Otherwise Noted)

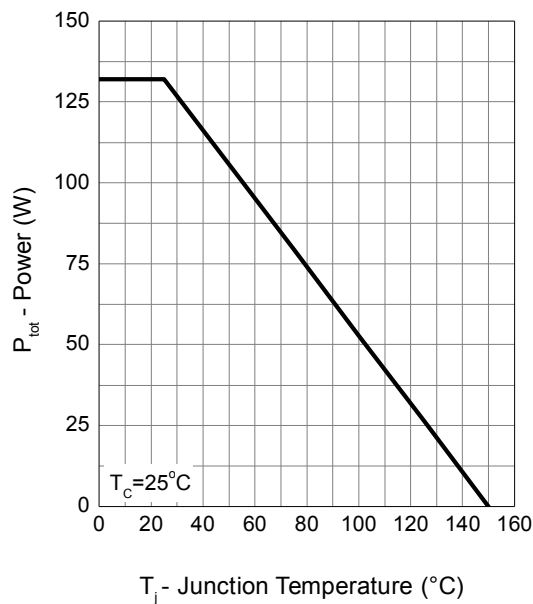
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =-250μA	-60	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-48V, V _{GS} =0V T _J =85°C	-	-	1 -30	μA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =-250μA	-1	-1.5	-2	V
I _{GSS}	Gate Leakage Current	V _{GS} =±25V, V _{DS} =0V	-	-	±100	nA
R _{DS(ON)} ^b	Drain-Source On-state Resistance	V _{GS} =-10V, I _{DS} =-25A	-	8.5	11	mΩ
		V _{GS} =-4.5 V, I _{DS} =-25A	-	9.5	12	mΩ
Diode Characteristics						
V _{SD} ^b	Diode Forward Voltage	I _{SD} =-1A, V _{GS} =0V	-	-0.7	-1	V
t _{rr}	Reverse Recovery Time	I _{SD} =-25A, dI _{SD} /dt=100A/μs	-	35	-	ns
Q _{rr}	Reverse Recovery Charge		-	37	-	nC
Dynamic Characteristics ^c						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz	-	2.7	-	Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =-30V, Frequency=1.0MHz	-	4068	-	pF
C _{oss}	Output Capacitance		-	495	-	
C _{rss}	Reverse Transfer Capacitance		-	281	-	
t _{d(ON)}	Turn-on Delay Time	V _{DD} =-30V, R _L =30Ω, I _{DS} =-1A, V _{GEN} =-10V, R _G =6Ω	-	15	-	ns
t _r	Turn-on Rise Time		-	13	-	
t _{d(OFF)}	Turn-off Delay Time		-	119	-	
t _f	Turn-off Fall Time		-	60	-	
Gate Charge Characteristics ^c						
Q _g	Total Gate Charge	V _{DS} =-30V, V _{GS} =-10V, I _{DS} =-25A	-	88	-	nC
Q _{gs}	Gate-Source Charge		-	12	-	
Q _{gd}	Gate-Drain Charge		-	21	-	

Note b Pulse test; pulse width≤300μs, duty cycle≤2%.

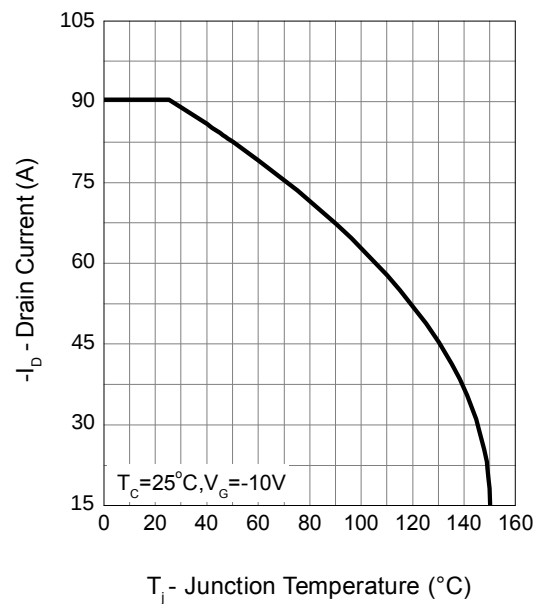
Note c Guaranteed by design, not subject to production testing.

Typical Operating Characteristics

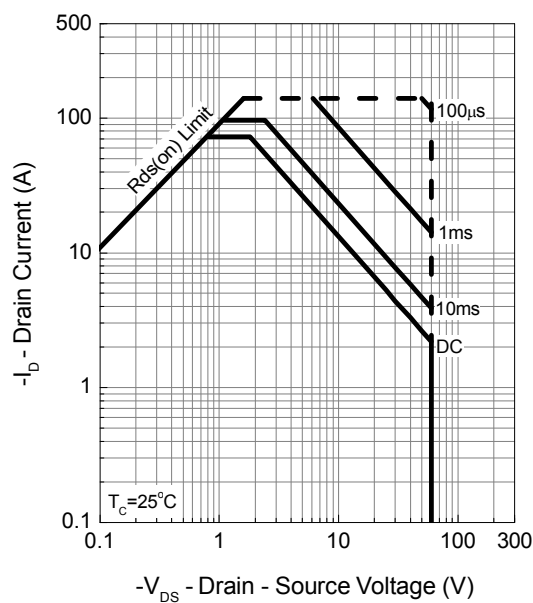
Power Dissipation



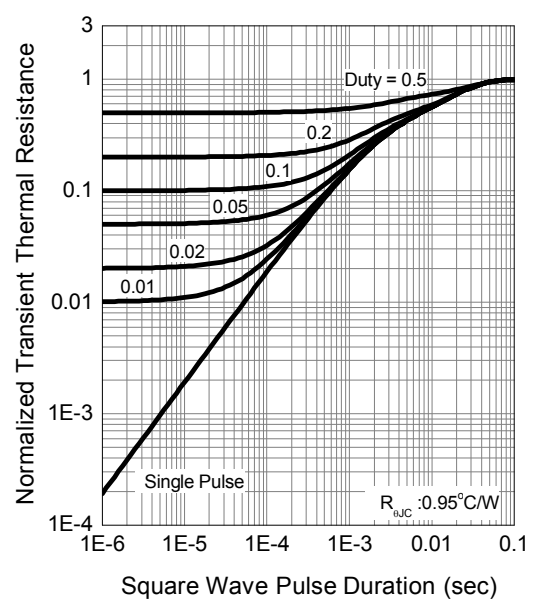
Drain Current



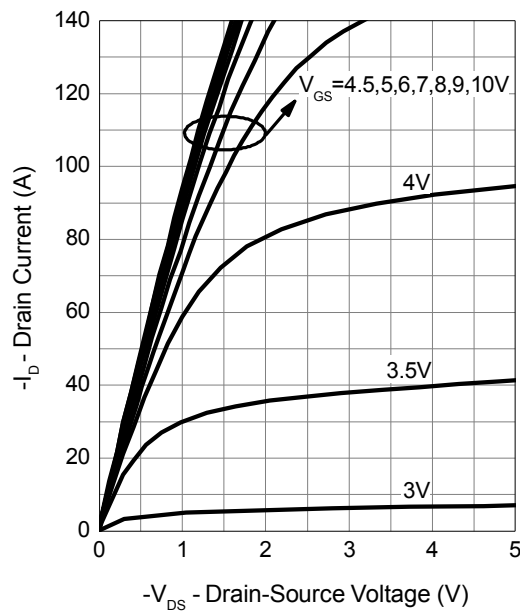
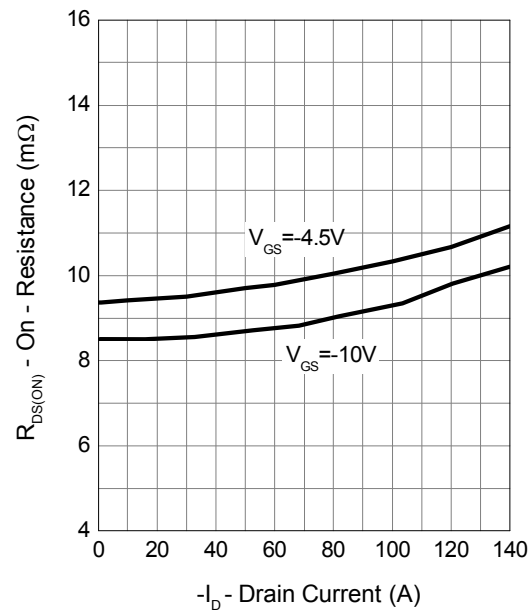
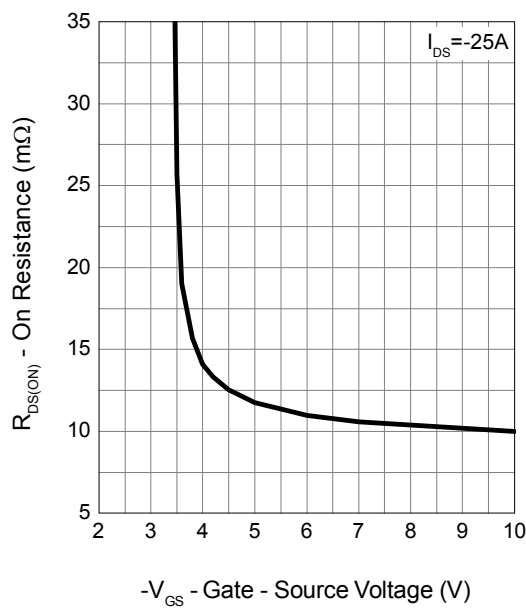
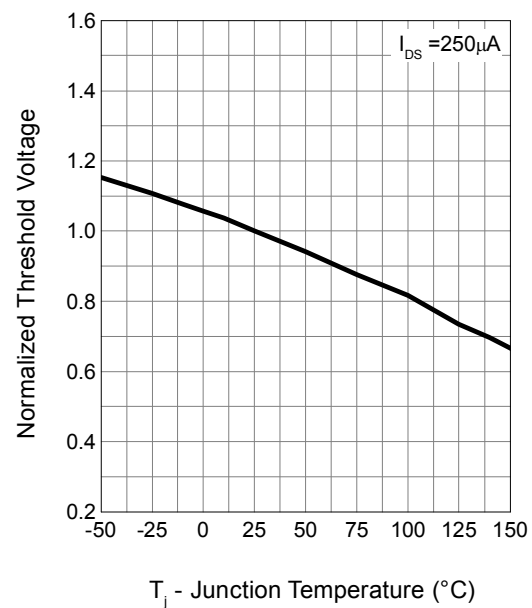
Safe Operation Area



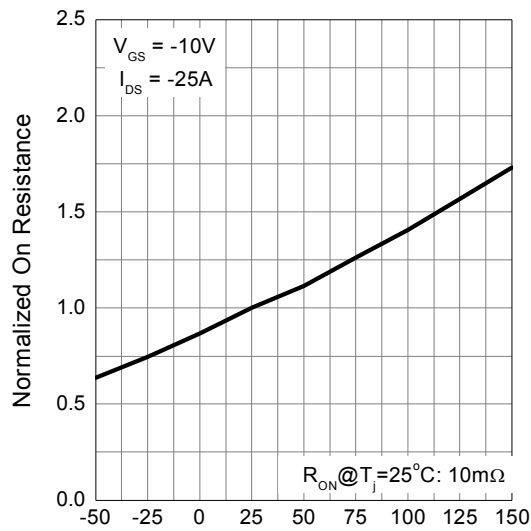
Thermal Transient Impedance



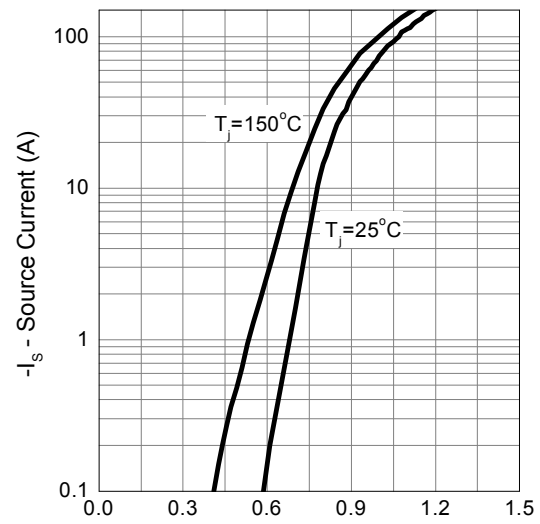
Typical Operating Characteristics (Cont.)

Output Characteristics

Drain-Source On Resistance

Gate-Source On Resistance

Gate Threshold Voltage


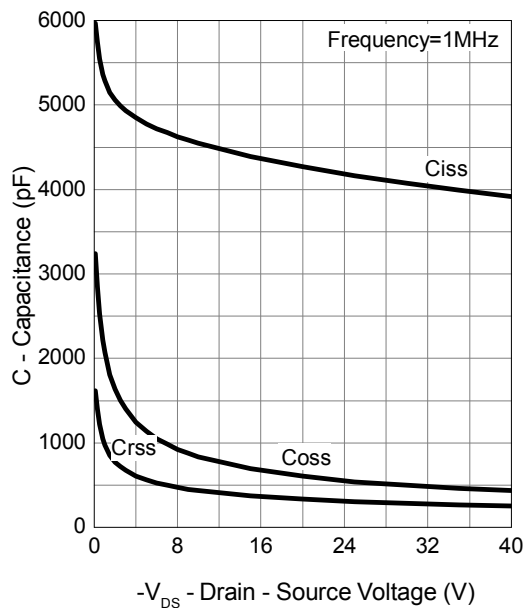
Typical Operating Characteristics (Cont.)

Drain-Source On Resistance


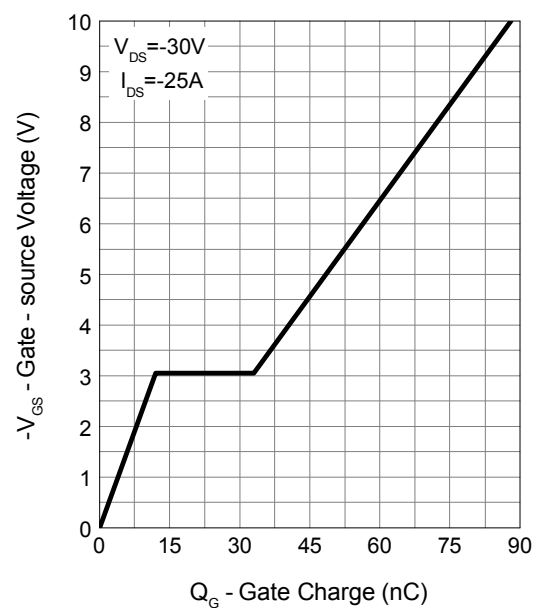
T_J - Junction Temperature ($^{\circ}\text{C}$)

Source-Drain Diode Forward


$-V_{SD}$ - Source - Drain Voltage (V)

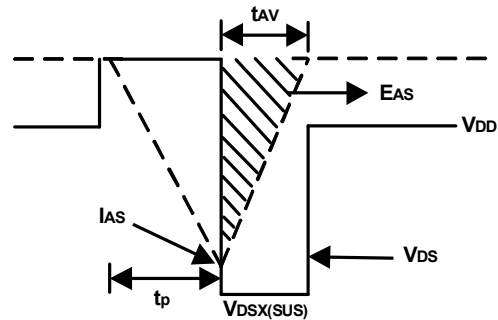
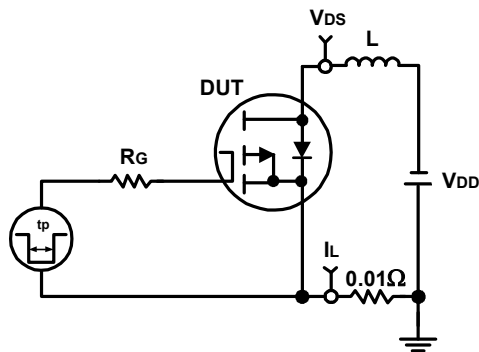
Capacitance


$-V_{DS}$ - Drain - Source Voltage (V)

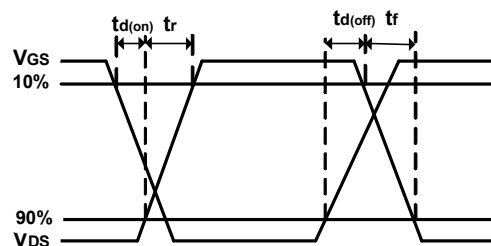
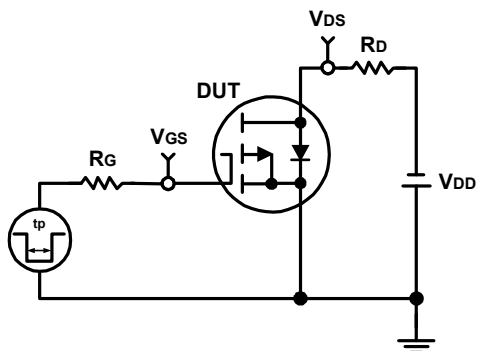
Gate Charge


Q_G - Gate Charge (nC)

Avalanche Test Circuit and Waveforms

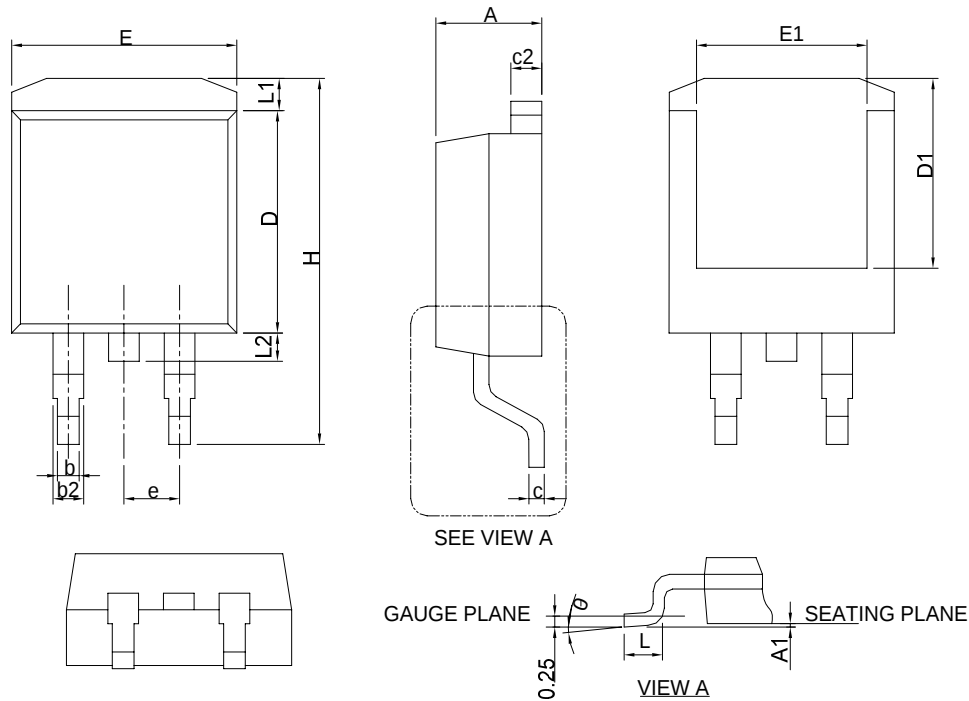


Switching Time Test Circuit and Waveforms



Package Information

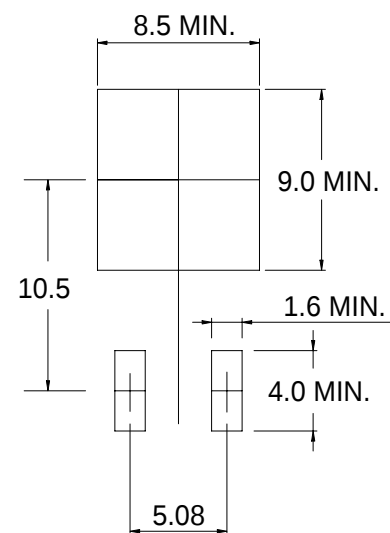
TO-263



SYMBOL	TO-263			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	4.06	4.83	0.160	0.190
A1	0.00	0.25	0.000	0.010
b	0.51	0.99	0.020	0.039
b2	1.14	1.78	0.045	0.070
c	0.38	0.74	0.015	0.029
c2	1.14	1.65	0.045	0.065
D	8.38	9.65	0.330	0.380
D1	6.00	9.00	0.236	0.354
E	9.65	11.43	0.380	0.450
E1	6.22	9.00	0.245	0.354
e	2.54 BSC		0.100 BSC	
H	14.61	15.88	0.575	0.625
L	1.78	2.79	0.070	0.110
L1	-	1.68	-	0.066
L2	-	1.78	-	0.070
θ	0°	8°	0°	8°

Note : Follow JEDEC TO-263 AB.

RECOMMENDED LAND PATTERN



UNIT: mm