

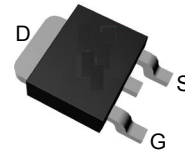
Features

- -20V/-50A,
 $R_{DS(ON)} = 10\text{m}\Omega(\text{typ.}) @ V_{GS} = -4.5\text{V}$
 $R_{DS(ON)} = 13\text{m}\Omega(\text{typ.}) @ V_{GS} = -2.5\text{V}$
- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)
- Moisture Sensitivity Level MSL1 (per JEDEC J-STD-020D)

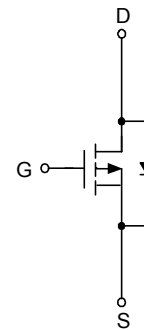
Applications

- Power Magagement in Desktop or DC/DC Converters

Pin Description



Top View of TO-252-2



P-Channel MOSFET

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

Symbol	Parameter		Rating	Unit
V _{DSS}	Drain-Source Voltage		-20	V
V _{GSS}	Gate-Source Voltage		±12	
I _D ^a	Continuous Drain Current (V _{GS} =-10V)	T _A =25°C	-50	A
		T _A =100°C	-38	
I _{DM} ^a	300μs Pulsed Drain Current (V _{GS} =-10V)		-150	
I _S ^a	Diode Continuous Forward Current		-50	
I _{AS} ^b	Avalanche Current, Single pulse (L=0.3mH)		-25	
E _{AS} ^b	Avalanche Energy, Single pulse (L=0.3mH)		93	mJ
T _J	Maximum Junction Temperature		150	°C
T _{STG}	Storage Temperature Range		-55 to 150	
P _D ^a	Maximum Power Dissipation	T _A =25°C	50	W
		T _A =100°C	20	
R _{θJA} ^{a,c}	Thermal Resistance-Junction to Ambient	t ≤ 10s	20	°C/W
		Steady State	50	
R _{θJC}	Thermal Resistance-Junction to case	Steady State	2.5	

Note a : Surface Mounted on 1in² pad area, $t \leq 10\text{sec}$.

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

Note c : Maximum under Steady State conditions is 75°C/W .

Electrical Characteristics ($T_A = 25^\circ\text{C}$ Unless Otherwise Noted)

Symbol	Parameter	Test Conditions				Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =-250μA	-20	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-16V, V _{GS} =0V	-	-	-1	μA
		T _J =85°C	-	-	-30	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =-250μA	-0.4	-0.8	-1.0	V
I _{GSS}	Gate Leakage Current	V _{GS} =±12V, V _{DS} =0V	-	-	±100	nA
R _{DS(ON)} ^d	Drain-Source On-state Resistance	V _{GS} =-4.5V, I _{DS} =-40A	-	10	13	mΩ
		V _{GS} =-2.5V, I _{DS} =-25A	-	13	16	
Diode Characteristics						
V _{SD} ^d	Diode Forward Voltage	I _{SD} =-1A, V _{GS} =0V	-	-0.7	-1	V
t _{rr} ^e	Reverse Recovery Time	I _{SD} =-20A,	-	19	-	ns
Q _{rr} ^e	Reverse Recovery Charge	di _{SD} /dt=100A/μs	-	10	-	nC

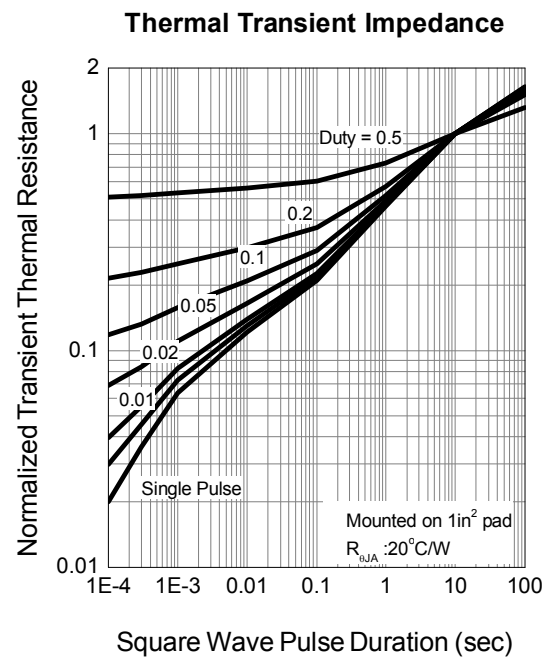
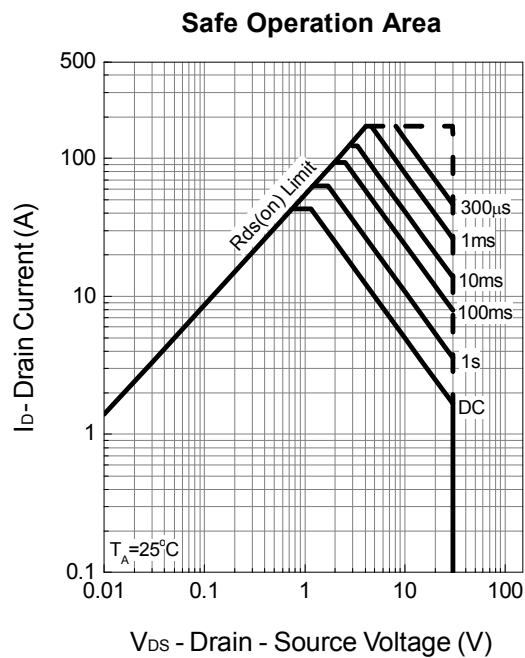
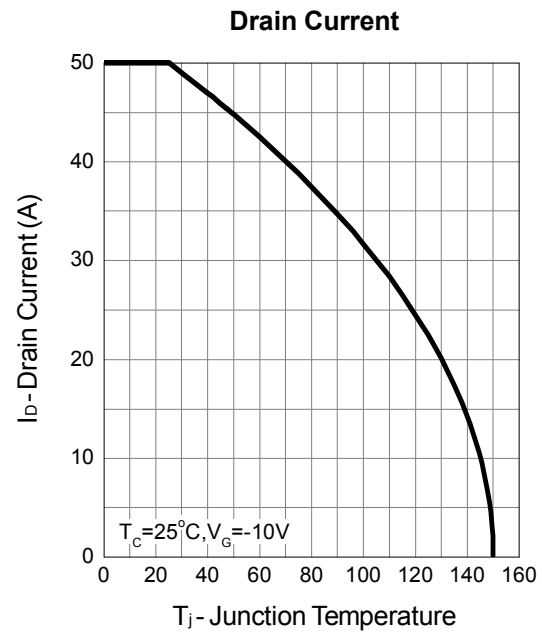
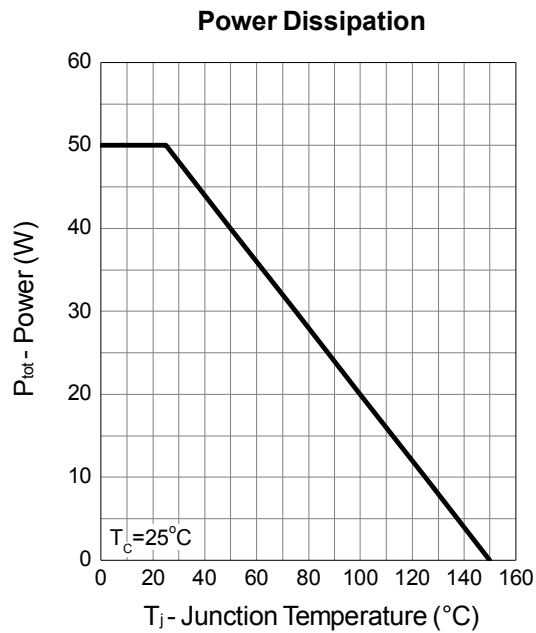
Electrical Characteristics (Cont.) ($T_A = 25^\circ\text{C}$ Unless Otherwise Noted)

Symbol	Parameter	Test Conditions				Unit
			Min.	Typ.	Max.	
Dynamic Characteristics ^e						
R _g	Gate Resistance	V _{GS} =0V, V _{DS} =0V,F=1MHz	-	3	-	Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =-15V, Frequency=1.0MHz	-	1250	-	pF
C _{oss}	Output Capacitance		-	262	-	
C _{rss}	Reverse Transfer Capacitance		-	187	-	
t _{d(ON)}	Turn-on Delay Time	V _{DD} =-15V, R _L =15Ω, I _{DS} =-1A, V _{GEN} =-10V, R _G =6Ω	-	8	-	ns
t _r	Turn-on Rise Time		-	12	-	
t _{d(OFF)}	Turn-off Delay Time		-	32	-	
t _f	Turn-off Fall Time		-	16	-	
Gate Charge Characteristics ^e						
Q _g	Total Gate Charge	V _{DS} =-15V, V _{GS} =-10V, I _{DS} =-20A	-	21	-	nC
Q _{gs}	Gate-Source Charge		-	2.6	-	
Q _{gd}	Gate-Drain Charge		-	6.2	-	

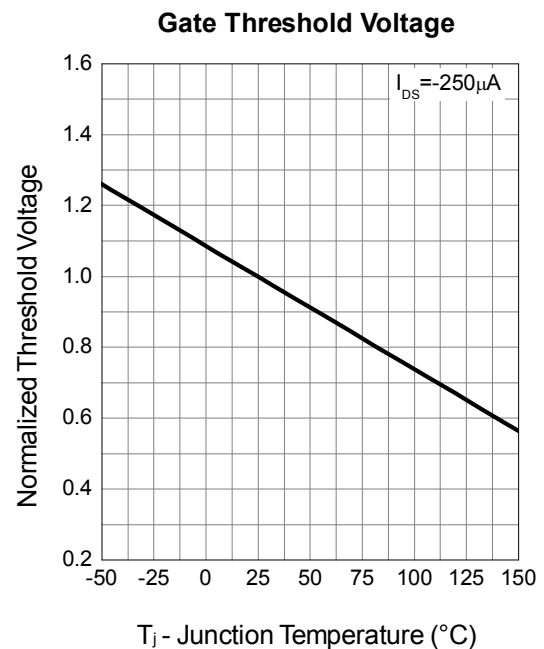
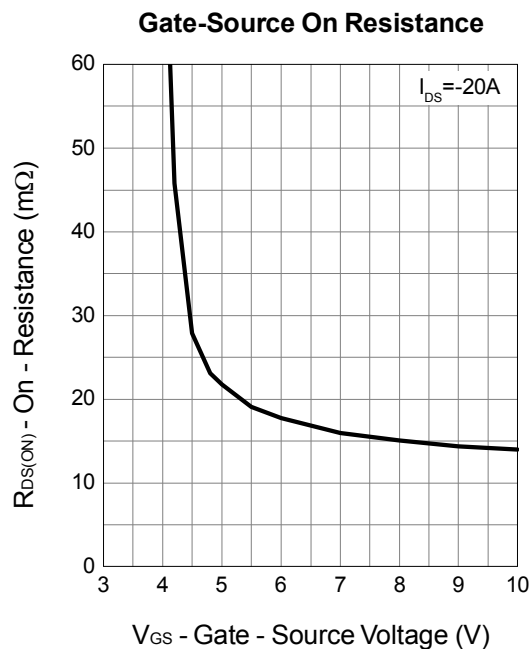
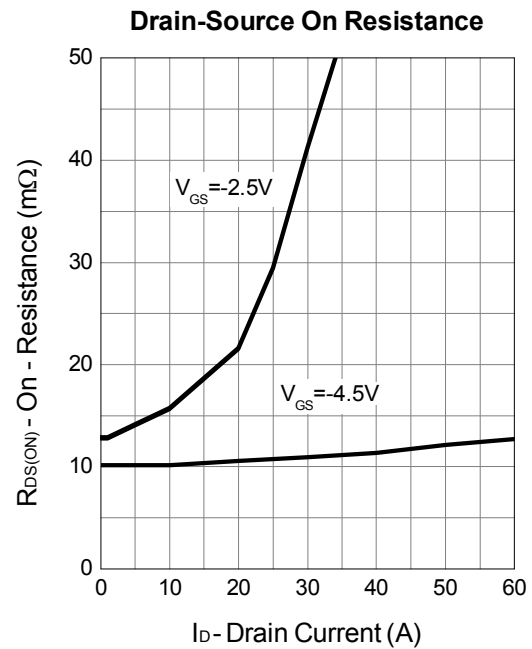
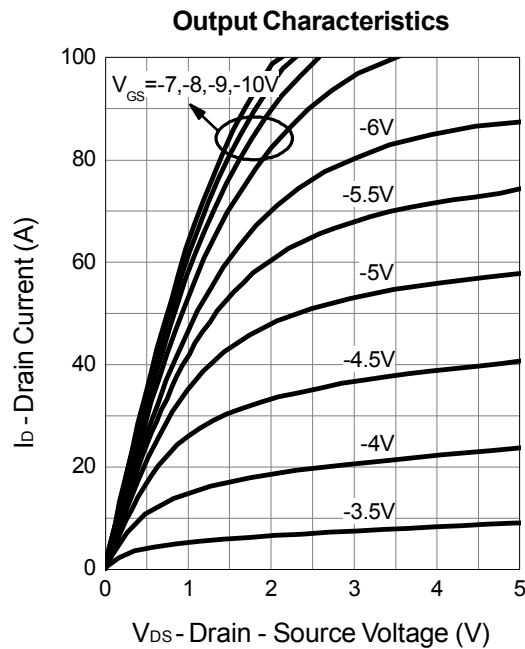
Note d : Pulse test ; pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.

Note e : Guaranteed by design, not subject to production testing.

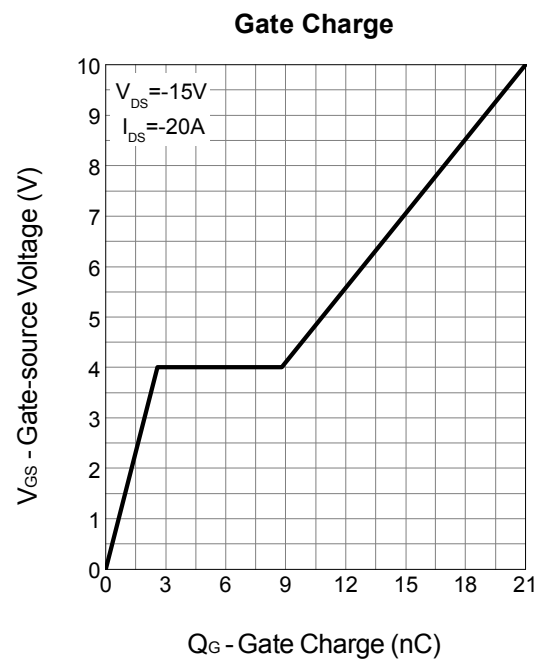
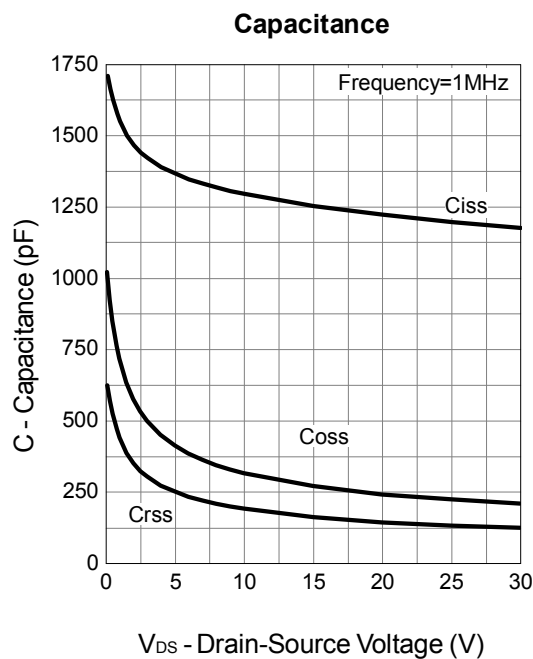
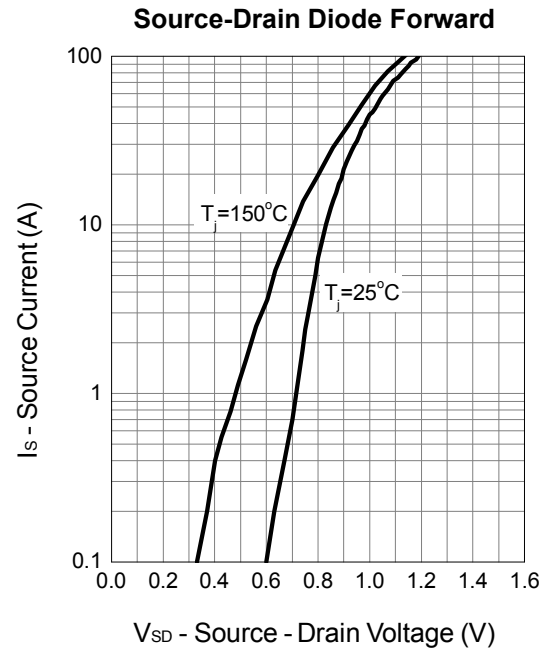
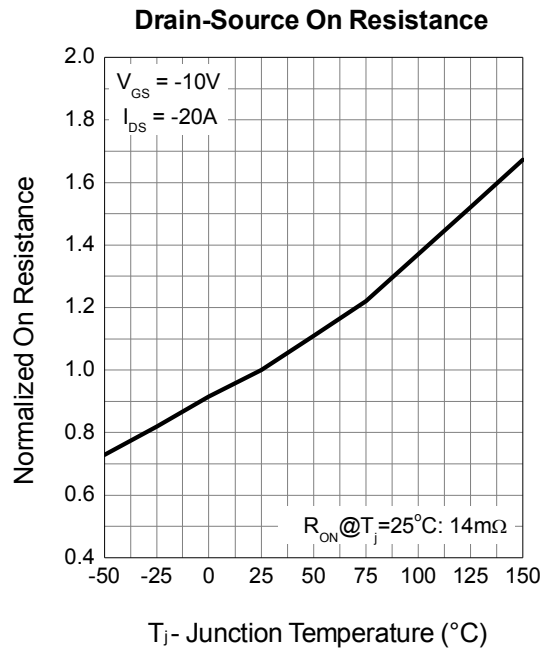
Typical Operating Characteristics



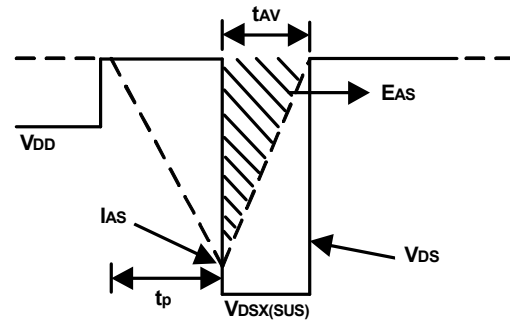
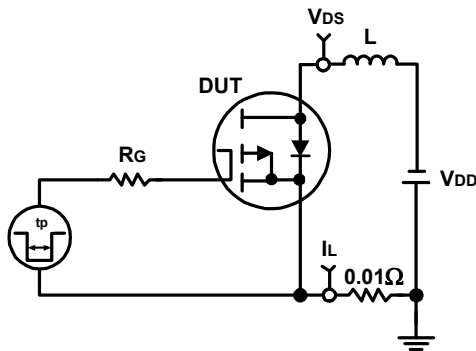
Typical Operating Characteristics (Cont.)



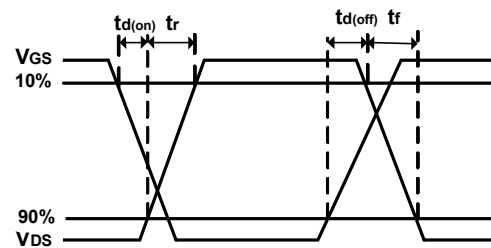
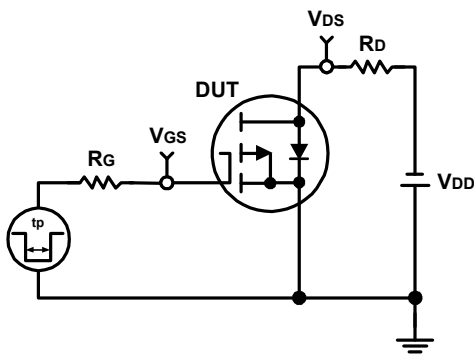
Typical Operating Characteristics (Cont.)



Avalanche Test Circuit and Waveforms



Switching Time Test Circuit and Waveforms



Package Information

