

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
60V	13m Ω @10V	50A

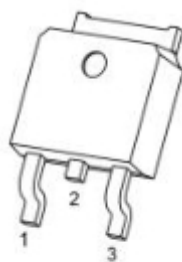
Feature

- High density cell design for ultra low Rdson
- Fully characterized avalanche voltage and current
- Good stability and uniformity with high EAS
- Excellent package for good heat dissipation

Applications

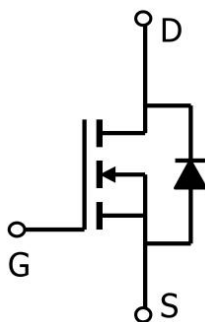
- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible power supply

Package



TO-252(G:1 D:2 S:3)

Circuit diagram



Marking



Absolute maximum ratings

(T_a=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	60	V
Gate-Source Voltage	V _{GS}	±20	V
Drain Current-Continuous (T _C =25°C)	I _D	50	A
Drain Current-Continuous (T _C =100°C)	I _{D (100°C)}	35.4	A
Pulsed Drain Current (T _C =25°C)	I _{DM}	200	A
Maximum Power Dissipation	P _D	85	W
Single pulse avalanche energy ^(Note 5)	E _{AS}	300	mJ
Thermal Resistance,Junction-to-Case ^(Note 2)	R _{θJC}	1.47	°C/W
Operating Junction and Storage Temperature Range	T _{STG., T_J}	-55 to 150	°C

Electrical characteristics

(T_A=25°C, unless otherwise noted)

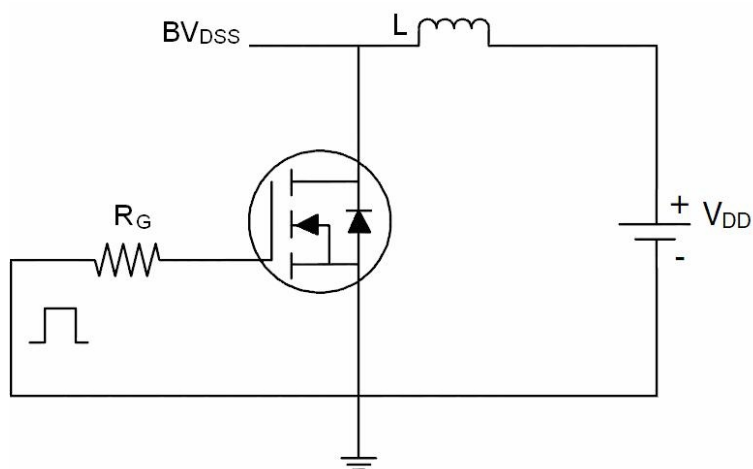
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{(BR)DSS}	V _{GS} = 0V, I _D =250μA	60			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =60V, V _{GS} = 0V			1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V			±100	μA
On Characteristics (Note 3)						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	2	3	4	V
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} =10V, I _D =20A		13	17	mΩ
		V _{GS} =5V, I _D =20A	18			
Dynamic Characteristics (Note 4)						
Input capacitance	C _{iSS}	V _{DS} =30V, V _{GS} =0V, f=1MHz		2050		pF
Output capacitance	C _{oSS}			158		
Reverse transfer capacitance	C _{rSS}			120		
Switching Characteristics(Note 4)						
Turn-on Delay Time	T _{d(on)}	V _{DD} =30V,R _G =6.7Ω V _{GS} =10V,, I _D =3A		7.4		nS
Turn-on Rise Time	T _r			5.1		
Turn-Off Delay Time	T _{d(off)}			28.2		
Turn-Off Fall Time	t _f			5.5		
Total Gate Charge	Q _g	V _{DS} =30V , I _D =10A , V _{GS} =10V,		50		pF
Gate-Source Charge	Q _{gs}			6		
Gate-Drain Charge	Q _{gd}			15		
Drain-Source Body Diode Characteristics						
Diode Forward Voltage (Note 3)	V _{SD}	V _{GS} =0V ,I _S =20A			1.2	V
Diode Forward Current (Note 2)	I _S				50	A
Reverse Recovery Time	t _{rr}	T _J = 25°C, I _F =20A		28		nS
Reverse Recovery Charge	Q _{rr}	di/dt = 100A/μs ^(Note3)		40		nC
Forward Turn-On Time	t _{on}	Intrinsic turn-on time is negligible (turn-on is dominated by LS+LD)				

Note:

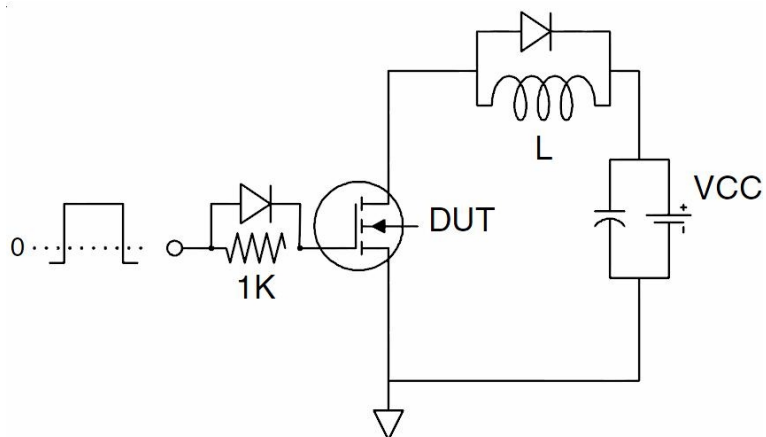
1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production
5. EAS condition : T_J=25°C, V_{DD}=30V, V_G=10V, L=0.5mH, R_G=25Ω

Test Circuits

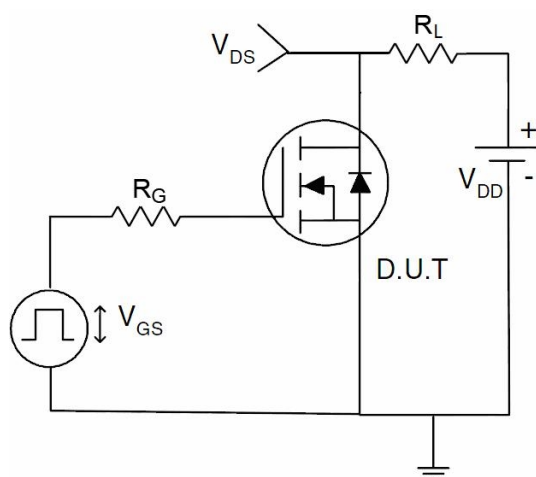
- EAS Test Circuits



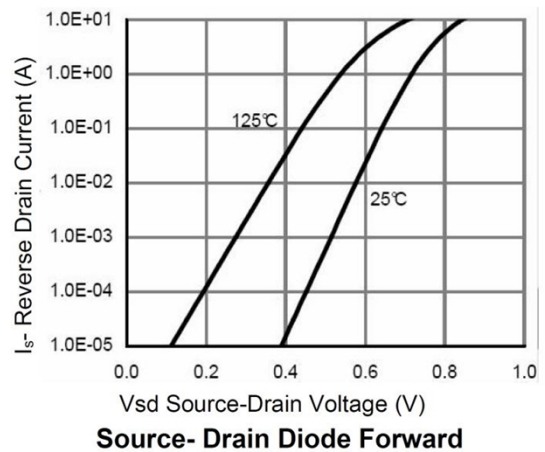
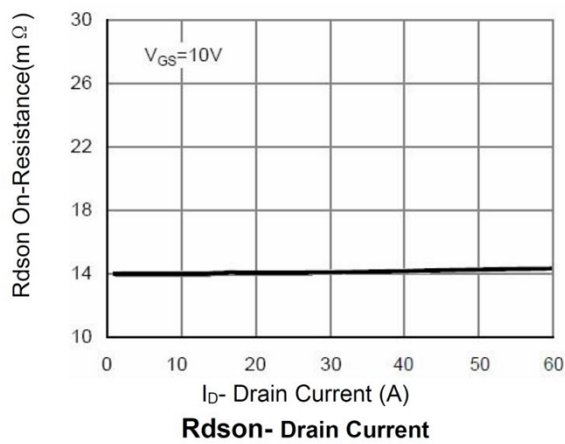
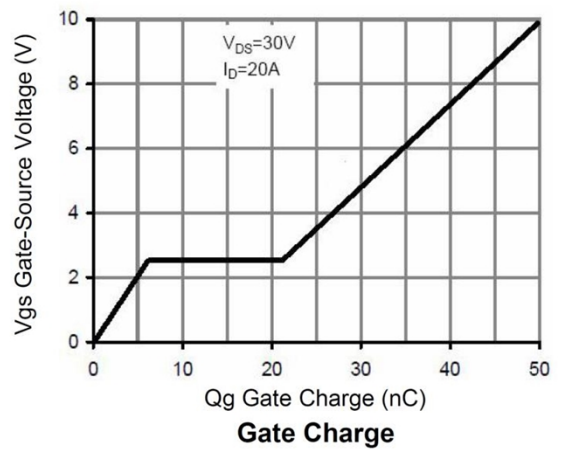
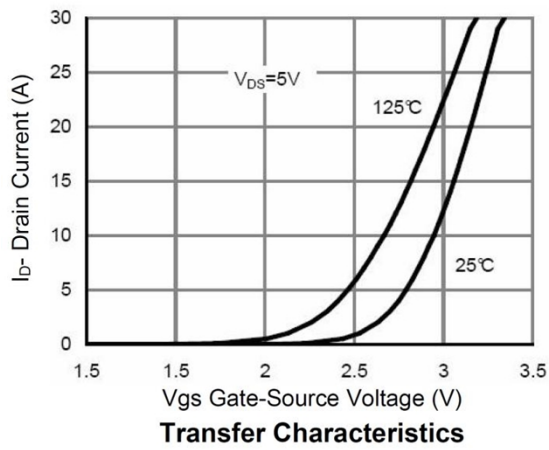
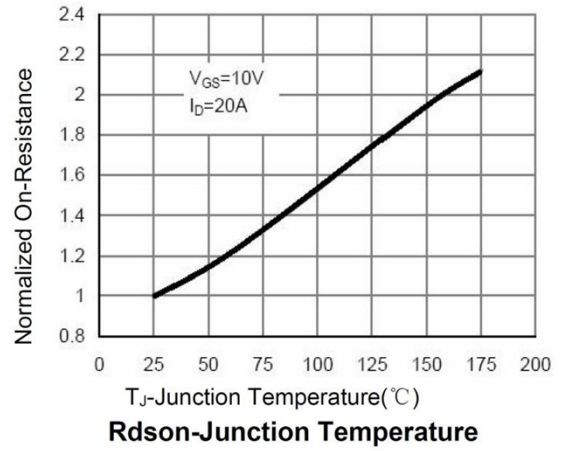
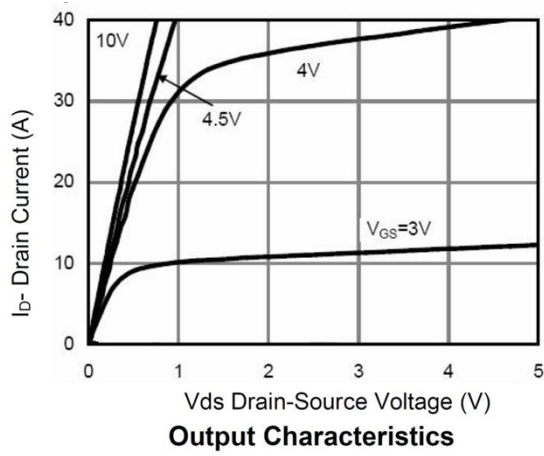
- Gate Charge Test Circuit

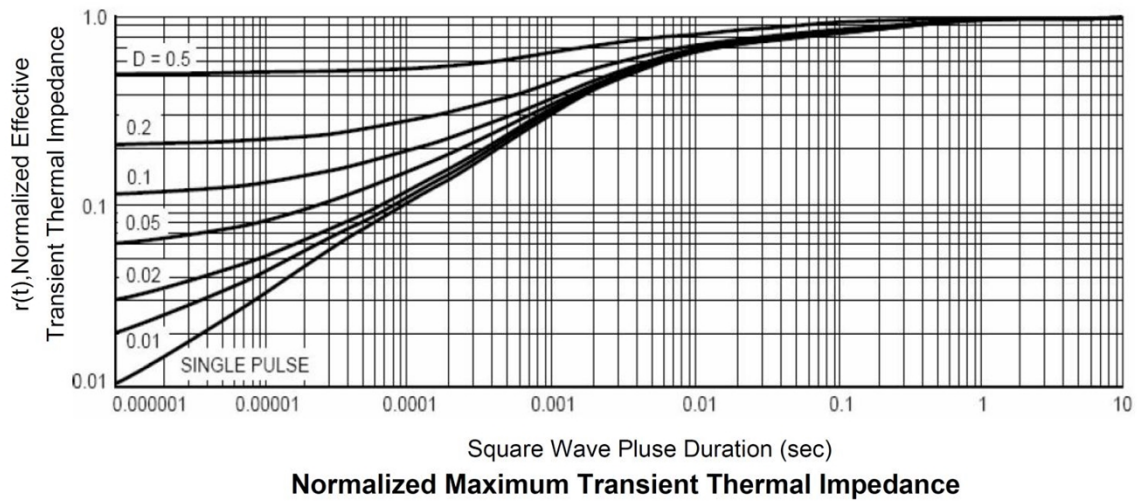
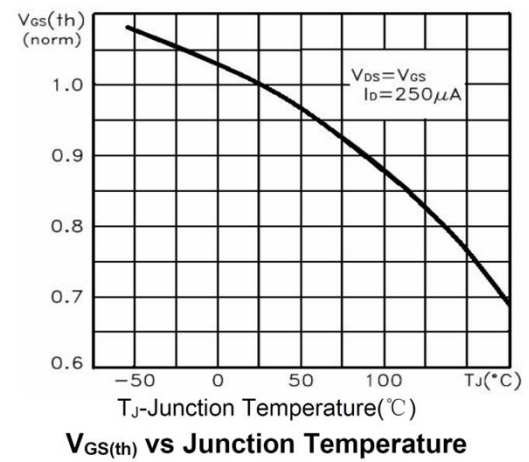
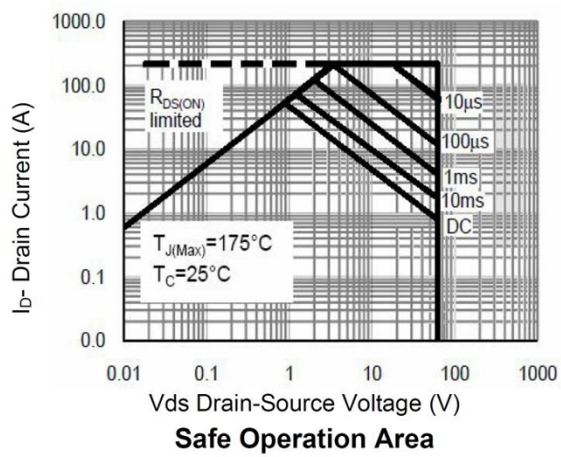
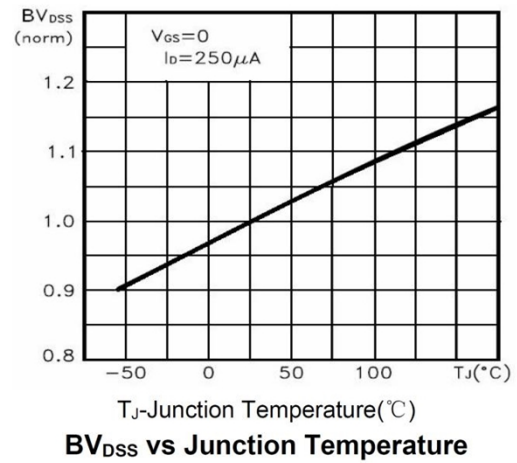
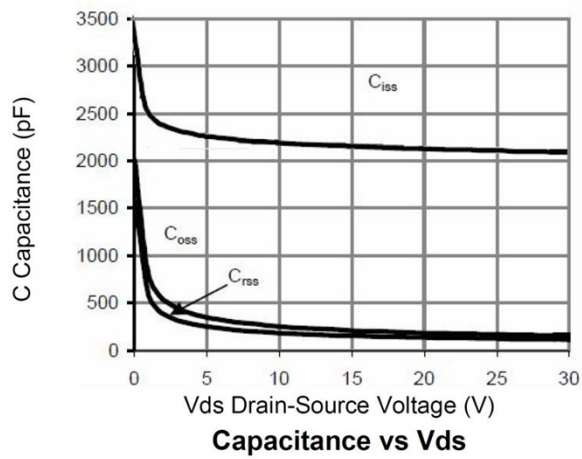


- Switch Time Test Circuit

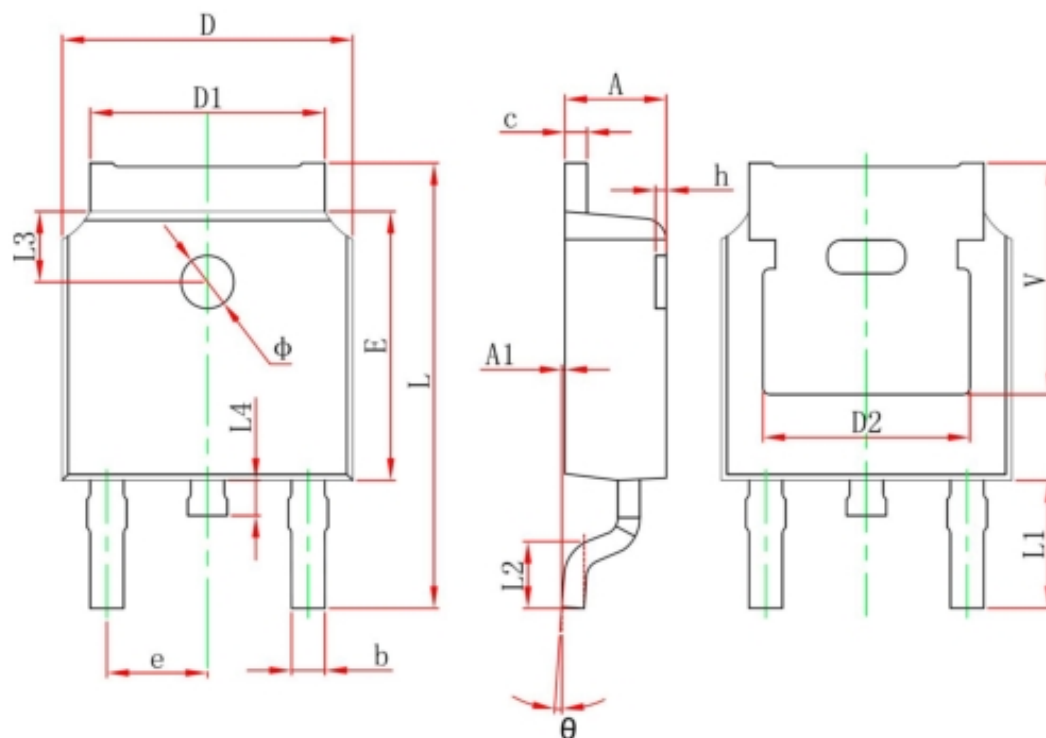


Typical Characteristics





TO-252 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.660	0.860	0.026	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830 REF.		0.190 REF.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.800	10.400	0.386	0.409
L1	2.900 REF.		0.114 REF.	
L2	1.400	1.700	0.055	0.067
L3	1.600 REF.		0.063 REF.	
L4	0.600	1.000	0.024	0.039
Φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.350 REF.		0.211 REF.	