

P-Channel Enhancement Mode MOSFET

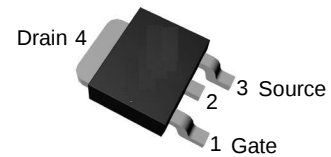
Features

- $V_{DS} = -40V, I_D = -20A$
 $R_{DS(ON)} = 28m\Omega$ (typ) @ $V_{GS} = -10V$
 $R_{DS(ON)} = 45m\Omega$ (typ) @ $V_{GS} = -4.5V$
- High Power and current handling capability
- Lead free product is acquired
- Surface Mount Package

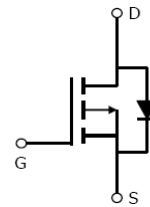
Application

- PWM applications
- Load switch
- Power management

Pin Description



TO-252(DPAK) top view



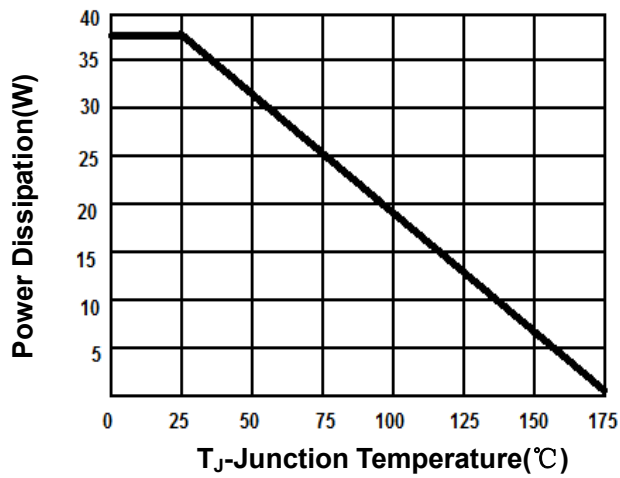
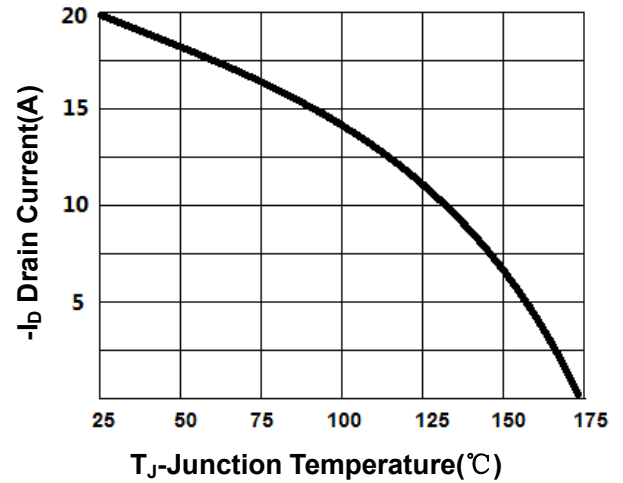
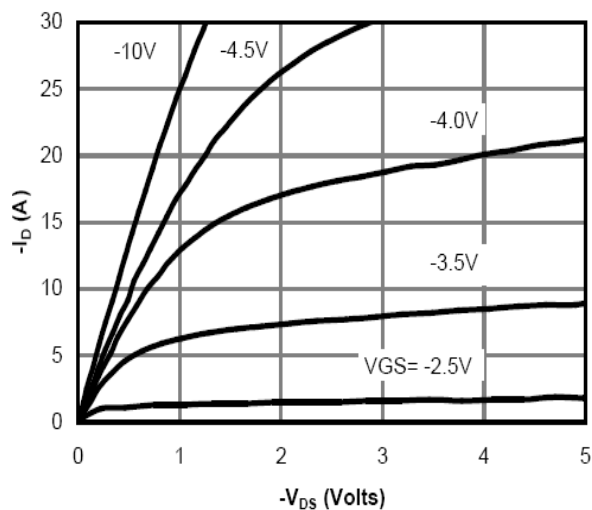
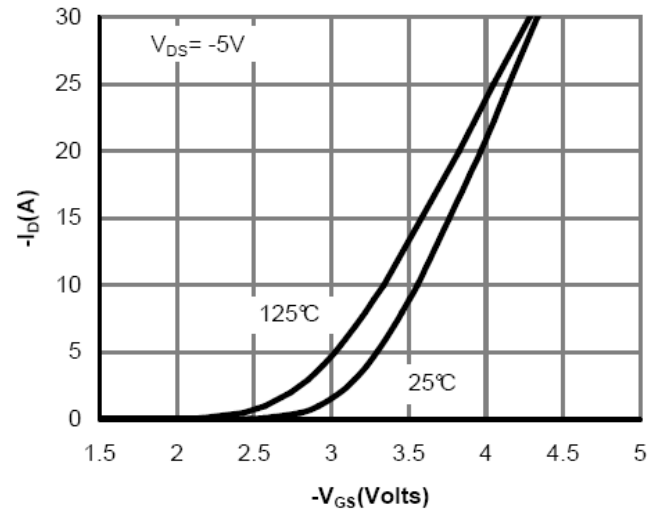
Absolute Maximum Ratings (T_A=25°C)

Symbol	Parameter	Value	Unit
V _{DS}	Drain-Source Voltage (V _{GS} =0V)	-40	V
V _{GS}	Gate-Source Voltage (V _{DS} =0V)	±20	V
I _D	Drain Current-Continuous(T _c =25°C)	-20	A
	Drain Current-Continuous(T _c =100°C)	-14	A
I _{DM (pluse)}	Drain Current-Continuous@ Current-Pulsed (Note 1)	-80	A
P _D	Maximum Power Dissipation(T _c =25°C)	37.5	W
	Maximum Power Dissipation(T _c =100°C)	19	W
T _J , T _{STG}	Operating Junction and Storage Temperature Range	-55 To 175	°C
R _{θJC}	Thermal Resistance, Junction-to-Case	4	°C/W

Electrical Characteristics (TA=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
On/Off States						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V I _D =-250μA	-40			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-32V,V _{GS} =0V			-1	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} =±20V,V _{DS} =0V			±100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} ,I _D =-250μA	-1	-2	-3	V
g _{FS}	Forward Transconductance	V _{DS} =-5V,I _D =-10A		25		S
R _{DS(ON)}	Drain-Source On-State Resistance	V _{GS} =-10V, I _D =-20A		28	38	mΩ
		V _{GS} =-4.5V, I _D =-10A		45	55	mΩ
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =-25V,V _{GS} =0V, f=1.0MHz		840		pF
C _{oss}	Output Capacitance			92		pF
C _{rss}	Reverse Transfer Capacitance			60		pF
Switching Times						
t _{d(on)}	Turn-on Delay Time	V _{GS} =-10V, V _{DS} =-20V, R _L =1.6Ω,R _{GEN} =3Ω		5		nS
t _r	Turn-on Rise Time			12		nS
t _{d(off)}	Turn-Off Delay Time			20		nS
t _f	Turn-Off Fall Time			4.5		nS
Q _g	Total Gate Charge	V _{GS} =-10V, V _{DS} =-20V, I _D =-15A		20		nC
Q _{gs}	Gate-Source Charge			2.5		nC
Q _{gd}	Gate-Drain Charge			4.5		nC
Source-Drain Diode Characteristics						
I _{SD}	Source-Drain Current(Body Diode)				-20	A
V _{SD}	Forward on Voltage	V _{GS} =0V,I _S =-20A			-1.2	V

Notes 1.Repetitive Rating: Pulse width limited by maximum junction temperature

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS (Curves)
Figure1. Power Dissipation

Figure2. Drain Current

Figure3. Output Characteristics

Figure4. Transfer Characteristics


Typical Operating Characteristics (Cont.)

Figure5. Capacitance

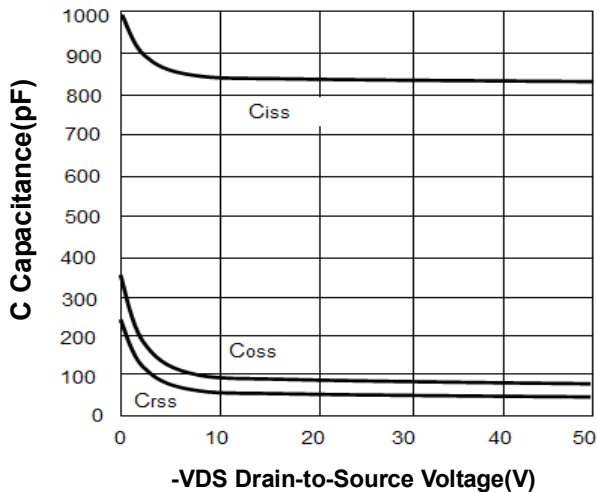


Figure6. $R_{DS(ON)}$ vs Junction Temperature

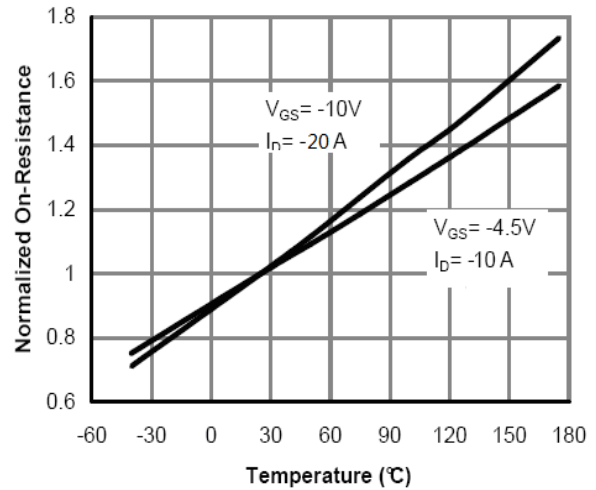


Figure7. $V_{GS(th)}$ vs Junction Temperature

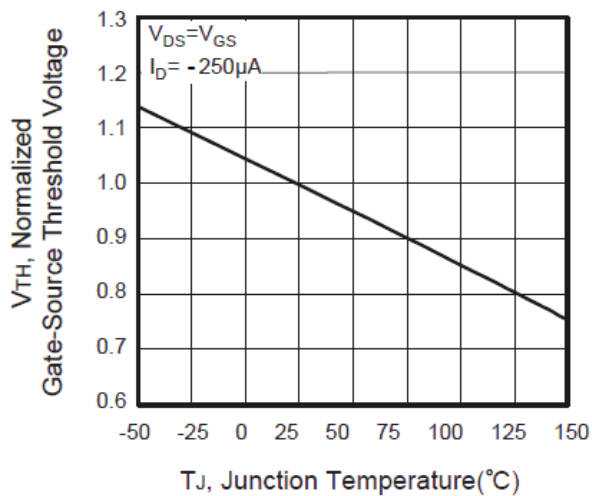
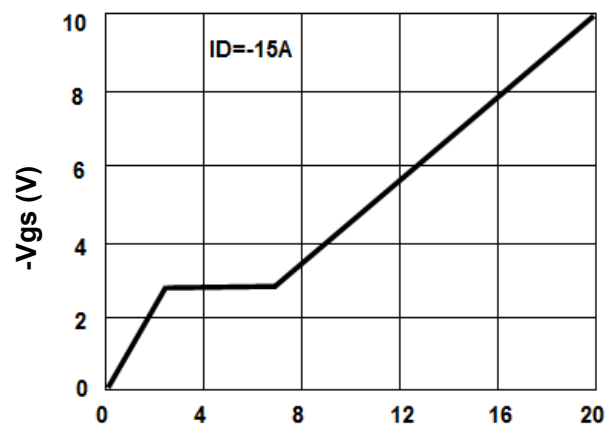
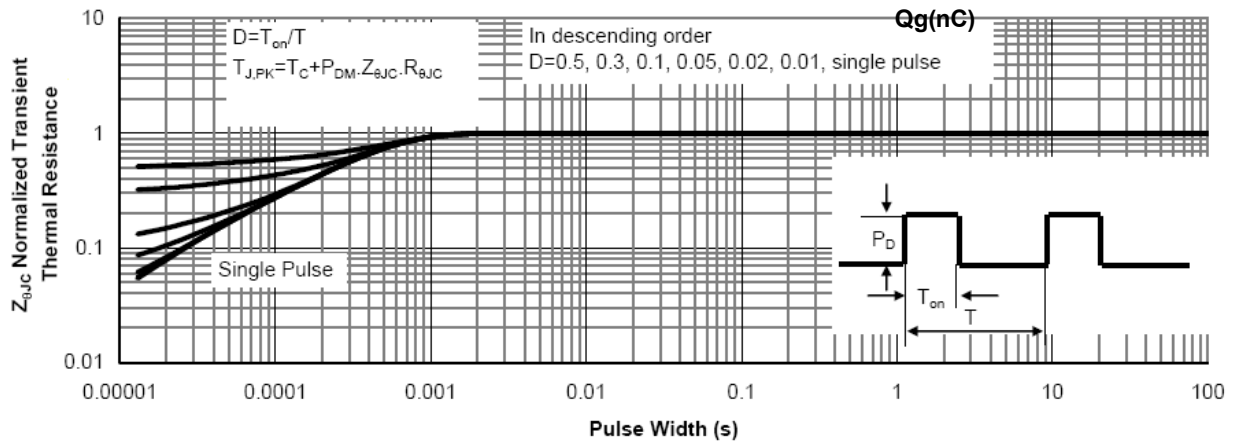


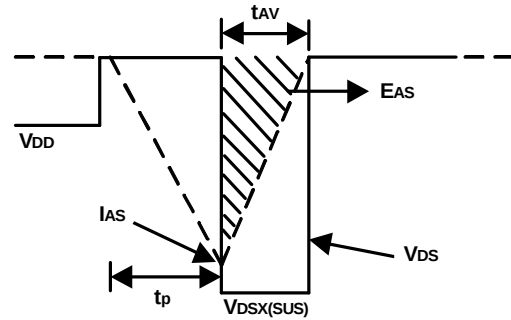
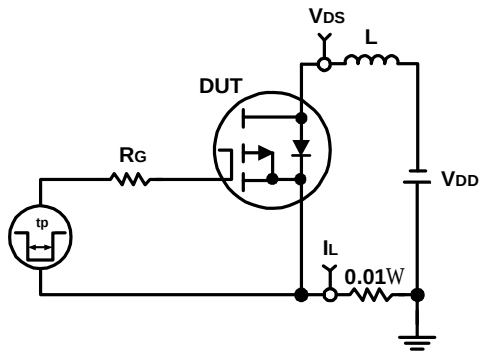
Figure8. Gate Charge Waveforms



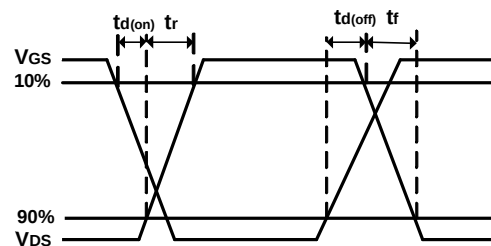
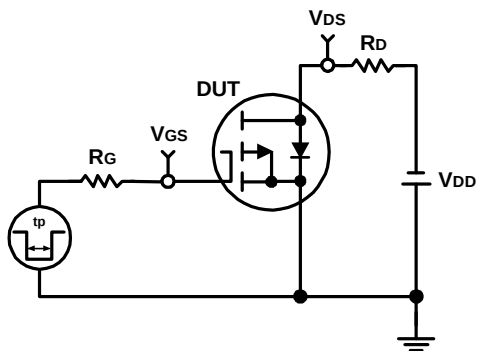
Typical Operating Characteristics (Cont.)



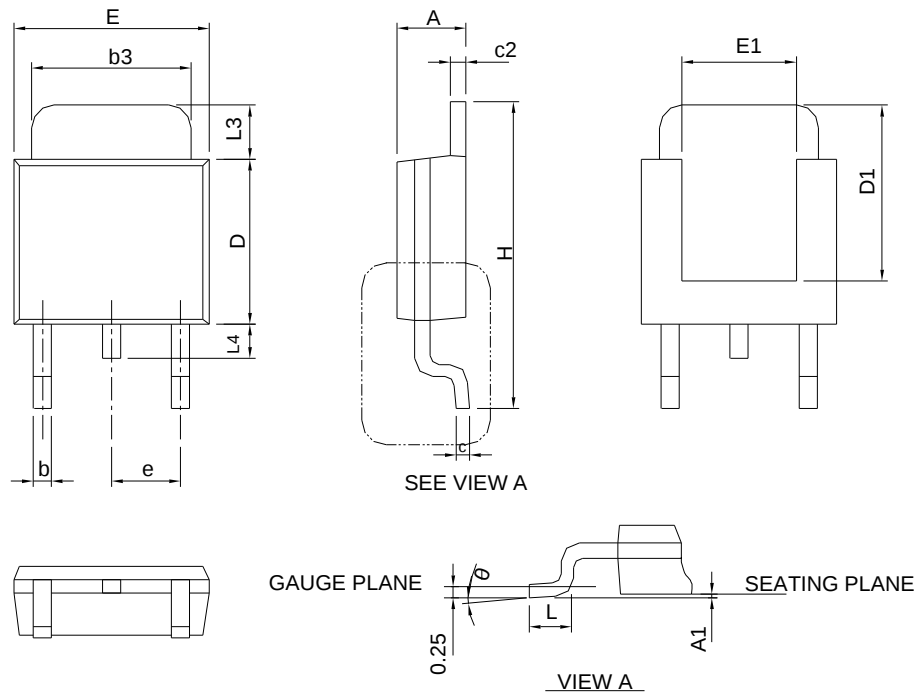
Avalanche Test Circuit and Waveforms



Switching Time Test Circuit and Waveforms

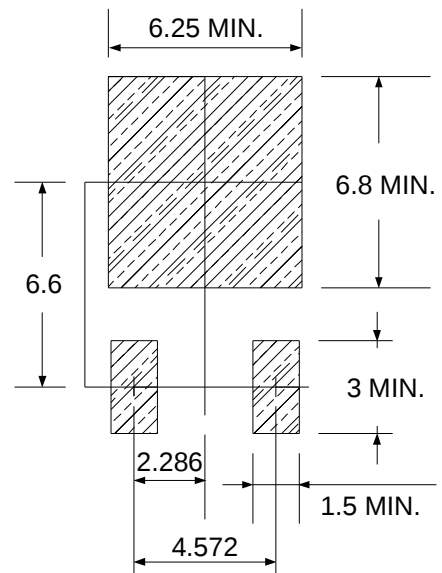


Package Information

TO-252-3


SYMBOL	TO-252-3			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	2.18	2.39	0.086	0.094
A1	-	0.13	-	0.005
b	0.50	0.89	0.020	0.035
b3	4.95	5.46	0.195	0.215
c	0.46	0.61	0.018	0.024
c2	0.46	0.89	0.018	0.035
D	5.33	6.22	0.210	0.245
D1	4.57	6.00	0.180	0.236
E	6.35	6.73	0.250	0.265
E1	3.81	6.00	0.150	0.236
e	2.29 BSC		0.090 BSC	
H	9.40	10.41	0.370	0.410
L	0.90	1.78	0.035	0.070
L3	0.89	2.03	0.035	0.080
L4	-	1.02	-	0.040
θ	0°	8°	0°	8°

RECOMMENDED LAND PATTERN



UNIT: mm

Note : Follow JEDEC TO-252 .