

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
-40V	25mΩ@-10V	-15A
	35mΩ@-4.5V	

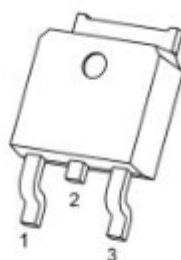
Feature

- $V_{DS} = -40V, I_D = -15A$
- $R_{DS(ON)} < 35m\Omega @ V_{GS} = -10V$
 $R_{DS(ON)} < 45m\Omega @ V_{GS} = -4.5V$
- High density cell design for ultra low Rdson
- Fully characterized avalanche voltage and current
- Excellent package for good heat dissipation

Applications

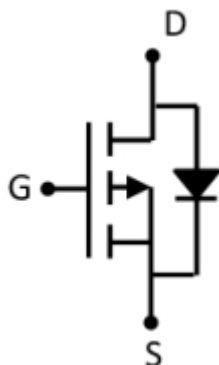
- Load switch
- PWM application

Package

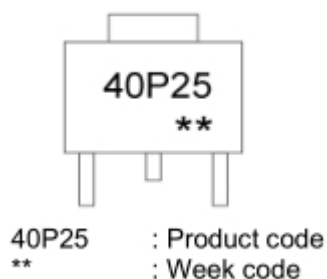


TO-252(G:1 D:2 S:3)

Circuit diagram



Marking



Absolute maximum ratings

($T_a=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-40	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	-15	A
Pulsed Drain Current	I_{DM}	-60	A
Power Dissipation	P_D	50	W
Thermal Resistance from Junction to Ambient ¹	$R_{\theta JA}$	2.5	$^{\circ}\text{C}/\text{W}$
Junction Temperature	T_J	150	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-55 To 150	$^{\circ}\text{C}$

Electrical characteristics

($T_A=25^{\circ}\text{C}$, 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	-40			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -40V, V _{GS} = 0V			-1	uA
Gate-Source Leakage	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V			±100	uA
Gate-Source Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250μA	-1.0	-1.5	-2.5	V
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = -10V, I _D = -15A		25	35	mΩ
		V _{GS} = -4.5V, I _D = -10A		35	45	
Forward Transconductance	g _{FS}	V _{DS} = -5V, I _D = -8A		12		S
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} = -15V, V _{GS} = 0V, f = 1MHz		1415		pF
Output Capacitance	C _{oss}			134		
Reverse Transfer Capacitance	C _{rss}			102		
Switching Characteristics						
Total Gate Charge@-4.5V	Q _g	V _{DS} = -15V, , I _D = - 4.5A, I _D = -1A		11.5		nC
Gate-Source Charge	Q _{gs}			3.5		
Gate-Drain Charge	Q _{gd}			3.3		
Turn-on Delay Time	T _{d(on)}	V _{DD} = -15V, V _{GS} = -10V, R _G = 3.3Ω, I _D = -1A		22		nS
Turn-on Rise Time	T _r			15.7		
Turn-off Delay Time	T _{d(off)}			59		
Turn-off Fall Time	T _f			5.5		
Drain-Source Diode Characteristics						
Continuous Source Current	I _s	V _G = V _D = 0V, Force Current			-15	A
Diode Forward Voltage	V _{SD}	V _{GS} = 0V, I _s = -1A, T _j = 25°C			-1.2	V

Typical Characteristics

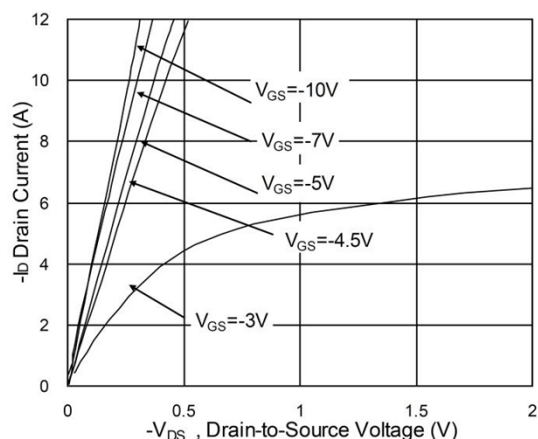


Fig.1 Typical Output Characteristics

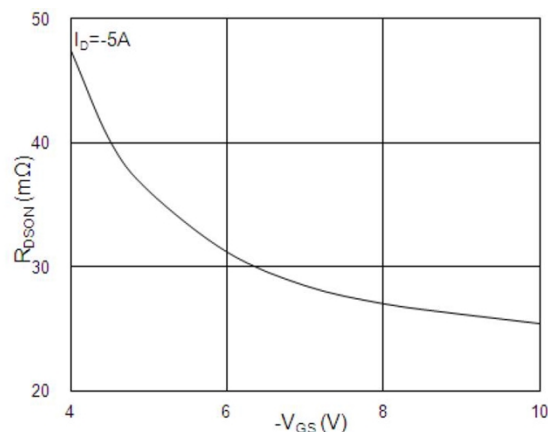


Fig.2 On-Resistance vs. Gate-Source Voltage

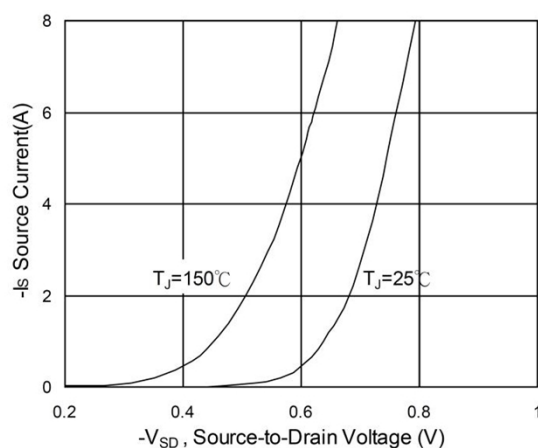


Fig.3 Forward Characteristics of Reverse

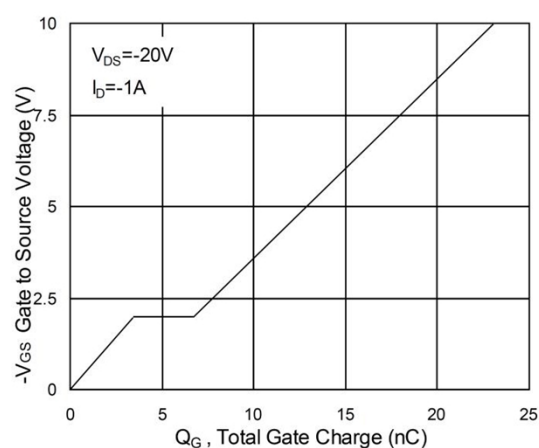


Fig.4 Gate Charge Characteristics

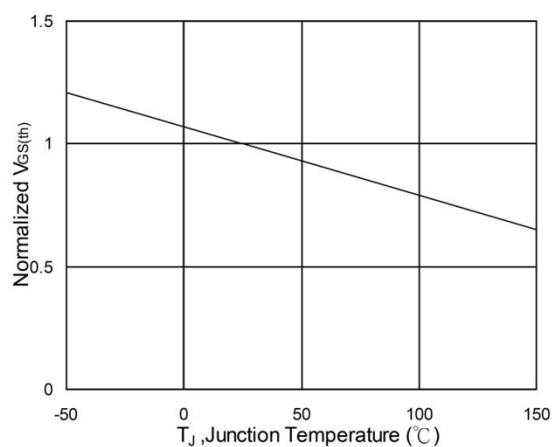


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

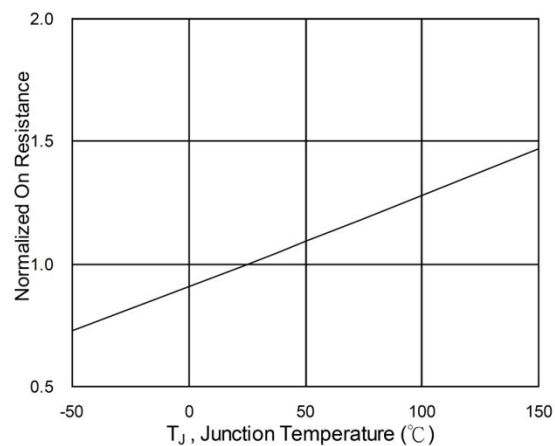


Fig.6 Normalized $R_{DS(on)}$ vs. T_J

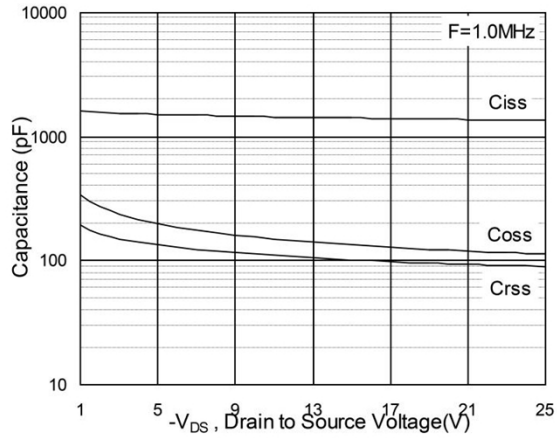


Fig.7 Capacitance

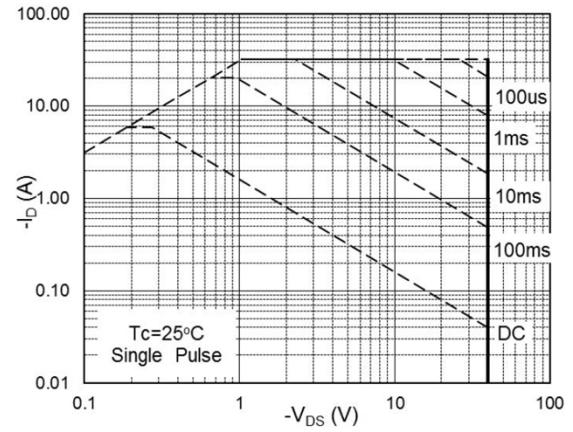


Fig.8 Safe Operating Area

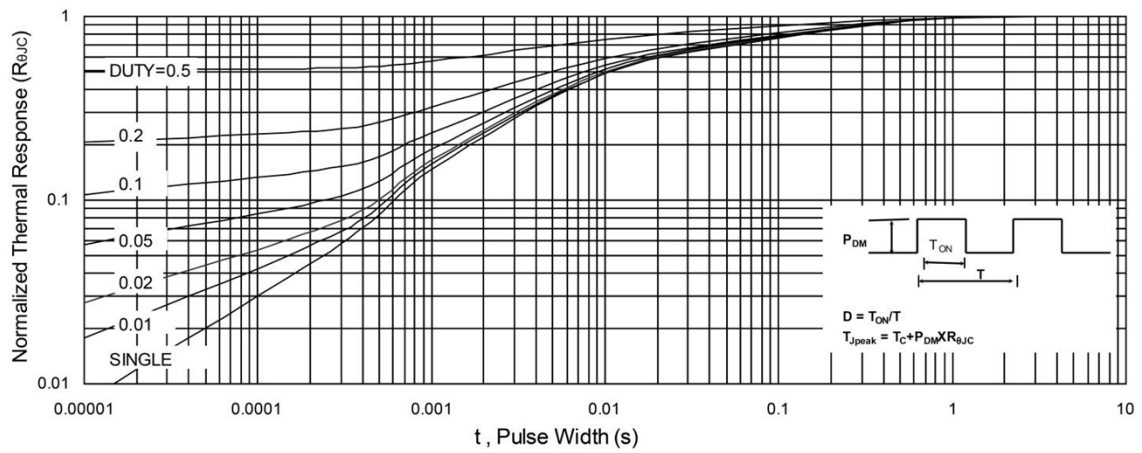
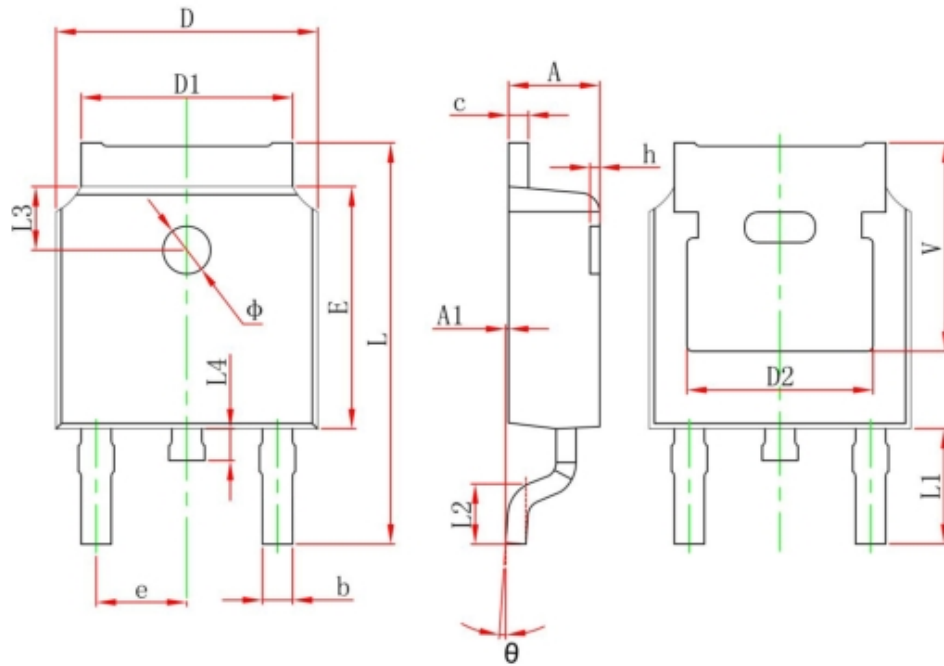


Fig.9 Normalized Maximum Transient Thermal Impedance

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.	