

-30V P-Channel Mosfet

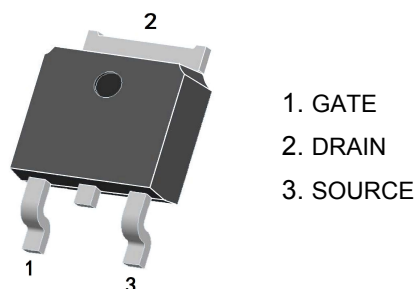
FEATURES

- $R_{DS(ON)} \leq 6.4m\Omega$ (4.9m Ω Typ.)
@ $V_{GS} = -10V$
- $R_{DS(ON)} \leq 10.5m\Omega$ (7.5m Ω Typ.)
@ $V_{GS} = -4.5V$

APPLICATIONS

- PWM Applications
- Load Switch
- Power Management

TO-252



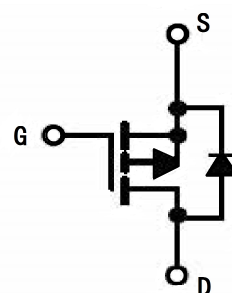
1. GATE
2. DRAIN
3. SOURCE

MARKING



YYXX:Date Code(year&month)

P-CHANNEL MOSFET



MAXIMUM RATINGS (TC=25°C unless otherwise noted)

Symbol	Parameter		Max.	Units
V_{DSS}	Drain-Source Voltage		-30	V
V_{GSS}	Gate-Source Voltage		± 20	V
I_D	Continuous Drain Current	$T_C = 25^\circ C$	-90	A
		$T_C = 100^\circ C$	-59	A
I_{DM}	Pulsed Drain Current ^{note1}		-360	A
E_{AS}	Single Pulsed Avalanche Energy ^{note2}		210	mJ
P_D	Power Dissipation	$T_C = 25^\circ C$	109	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case		1.4	$^\circ C/W$
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to +175	$^\circ C$

MOSFET ELECTRICAL CHARACTERISTICS Tc=25 °C unless otherwise specified

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D = -250μA	-30	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = -30V, V _{GS} =0V,	-	-	-1	μA
I _{GSS}	Gate to Body Leakage Current	V _{DS} =0V, V _{GS} = ±20V	-	-	±100	nA
On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D = -250μA	-1.0	-1.6	-2.5	V
R _{DS(on)}	Static Drain-Source on-Resistance note3	V _{GS} = -10V, I _D = -30A	-	4.9	6.4	mΩ
		V _{GS} = -4.5V, I _D = -20A	-	7.5	10.5	
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} = -15V, V _{GS} =0V, f=1.0MHz	-	6800	-	pF
C _{oss}	Output Capacitance		-	769	-	pF
C _{rss}	Reverse Transfer Capacitance		-	726	-	pF
Q _g	Total Gate Charge	V _{DS} = -15V, I _D = -30A, V _{GS} = -10V	-	30	-	nC
Q _{gs}	Gate-Source Charge		-	6	-	nC
Q _{gd}	Gate-Drain(“Miller”) Charge		-	8	-	nC
Switching Characteristics						
t _{d(on)}	Turn-on Delay Time	V _{DD} = -15V, I _D = -30A, V _{GS} = -10V, R _{GEN} =2.5Ω	-	11	-	ns
t _r	Turn-on Rise Time		-	13	-	ns
t _{d(off)}	Turn-off Delay Time		-	52	-	ns
t _f	Turn-off Fall Time		-	21	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I _S	Maximum Continuous Drain to Source Diode Forward Current		-	-	-90	A
I _{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	-360	A
V _{SD}	Drain to Source Diode Forward Voltage	V _{GS} =0V, I _S = -30A	-	-0.8	-1.2	V

Notes:1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. EAS condition: $T_J=25^\circ C, V_{DD} = -15V, V_G = -10V, R_G=25\Omega, L=0.5mH, I_{AS} = -29A$

3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$

TYPICAL PERFORMANCE CHARACTERISTICS

Figure1: Output Characteristics

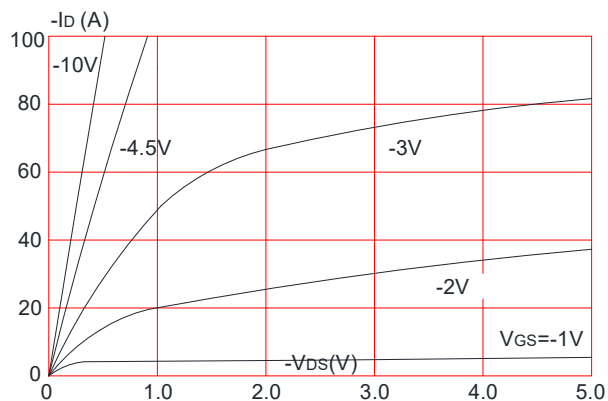


Figure 2: Typical Transfer Characteristics

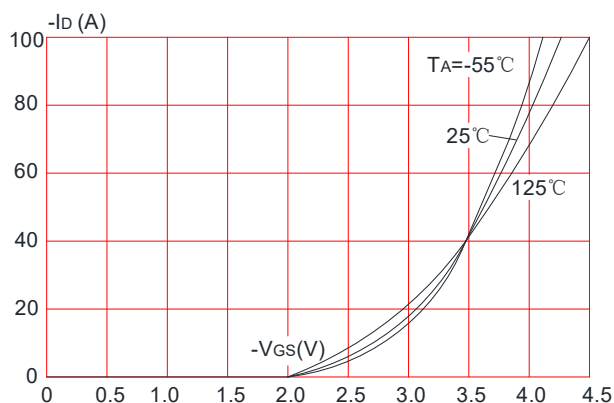


Figure 3: On-resistance vs. Drain Current

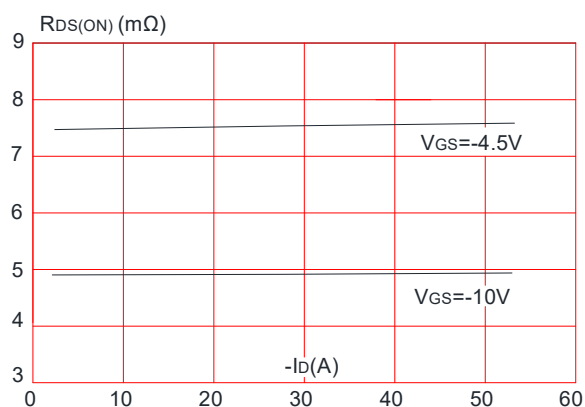


Figure 4: Body Diode Characteristics

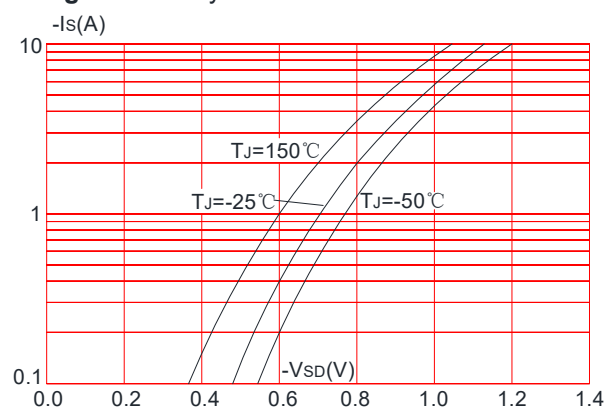


Figure 5: Gate Charge Characteristics

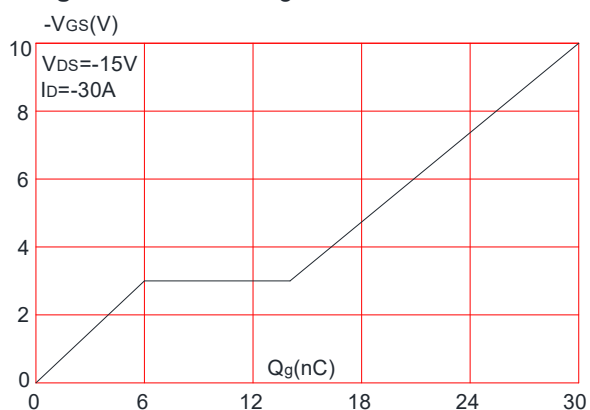
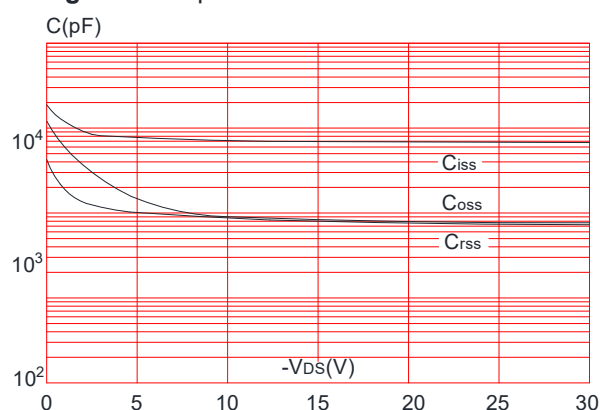


Figure 6: Capacitance Characteristics



TYPICAL PERFORMANCE CHARACTERISTICS (cont.)

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

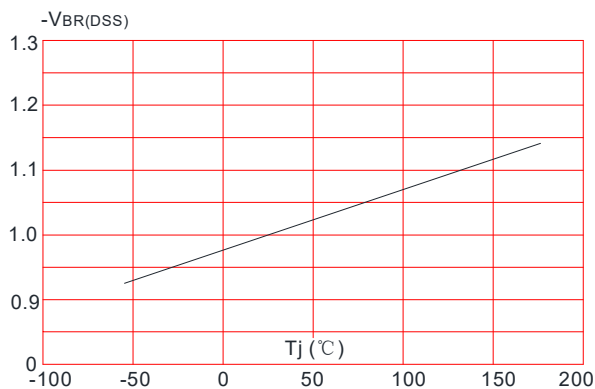


Figure 8: Normalized on Resistance vs. Junction Temperature

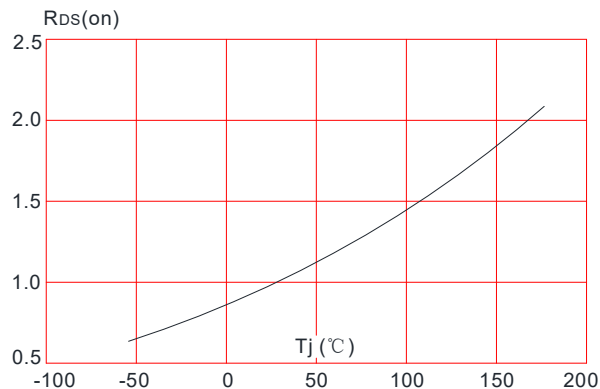


Figure 9: Maximum Safe Operating Area

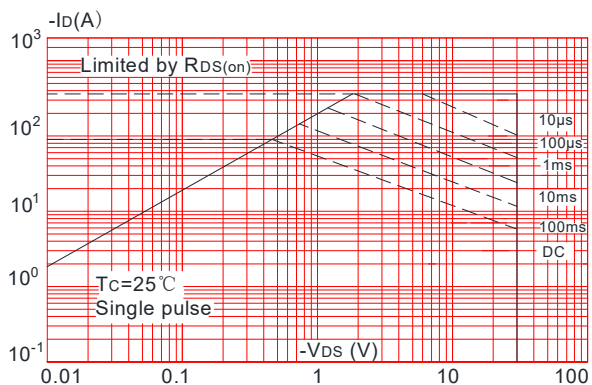


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

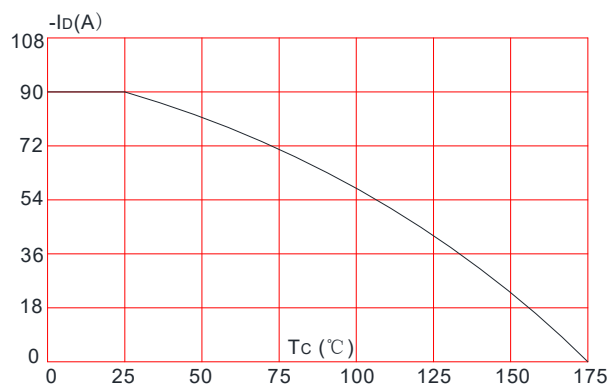
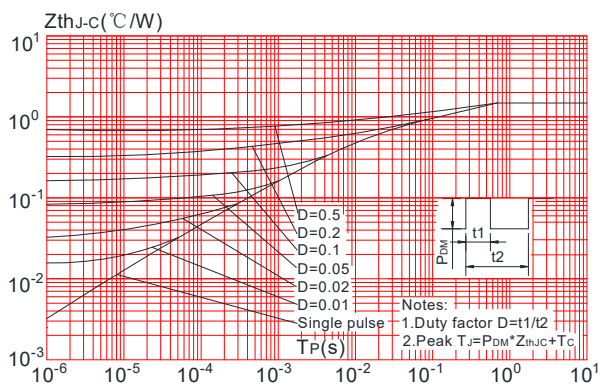
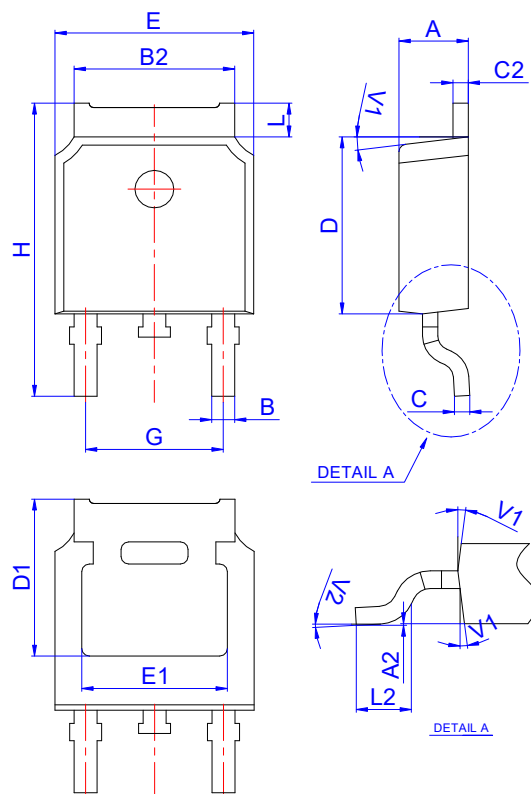


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case



TO-252 PACKAGE OUTLINE DRAWING



Symbols	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.10		2.50	0.083		0.098
A2	0		0.10	0		0.004
B	0.66		0.86	0.026		0.034
B2	5.18		5.48	0.202		0.216
C	0.40		0.60	0.016		0.024
C2	0.44		0.58	0.017		0.023
D	5.90		6.30	0.232		0.248
D1	5.30REF			0.209REF		
E	6.40		6.80	0.252		0.268
E1	4.63			0.182		
G	4.47		4.67	0.176		0.184
H	9.50		10.70	0.374		0.421
L	1.09		1.21	0.043		0.048
L2	1.35		1.65	0.053		0.065
V1		7°			7°	
V2	0°		6°	0°		6°