-60V P-Channel Power MOSFET

V_{DS}	-60V
I_D	-72A
$R_{DS(ON)_Typ.}$@V_{GS}=-10V	7.6mΩ

DESCRIPTION：

·Low On-Resistance

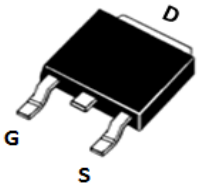
·Excellent FoM (figure of merit)

·100% ΔVDS & UIS & Rg tested

·Green Molding Compound

·Moisture Sensitivity: Level 3 per J-STD-020

·UL Flammability Classification Rating 94V-0



TO-252

TYPICAL APPLICATIONS：

·Load switch

·Motor control

·Reverse polarity protection

MAXIMUM RATINGS (at T_C = 25 °C, unless otherwise specified)

Characteristic	Condition	Symbol	Value	Unit
Drain-Source Voltage		V_{DSS}	-60	V
Gate-Source Voltage		V_{GSS}	±20	V
Continuous Drain Current (1)	T_C = 25℃ T_C = 100℃	I_D	-72 -45	A
Pulsed Drain Current (2)		I_{DM}	-286	A
Single Pulsed Avalanche Energy(3)		E_{AS}	410	mJ
Single Pulse Avalanche Current	L= 0.1mH	I_{AS}	-47	A
Power Dissipation	T_C = 25℃ T_C = 100℃	P_D	83 33	W
Junction & Storage Temperature Range		T_J, T_{STG}	-55~+150	℃
Thermal Resistance	Junction to Ambient	$R_{\theta JA}$	38	℃/W
Thermal Resistance	Junction to Case	$R_{\theta JC}$	1.5	℃/W

Notes： 1. This current is chip limited, which is calculated based on Rthjc.

2. This current is calculated on single pulse with 10μs Pulse.

3. Defined by design, not subject to production test, E_{AS} condition: T_J=25°C, V_{DD}= -30V, V_{GS}= -10V, L=1.0mH.

ELECTRICAL CHARATERISTICS (at T_J = 25 °C, unless otherwise specified)

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage VGS = 0V, ID =-250uA	$V_{(BR)DSS}$	-60			V
Zero Gate Voltage Drain Current VDS = -60 V, VGS = 0 V, T_J = 25 °C VDS = -60 V, VGS = 0 V, T_J = 125 °C	I_{DSS}			-1 -100	uA
Gate-Source Leakage Current VGS = ±20V, VDS = 0V	I_{GSS}			±100	nA
Gate-Source threshold voltage VDS = VGS, ID = -250uA	$V_{GS(th)}$	-1.2	-1.8	-2.5	V
Drain-Source On-State Resistance VGS = -10V, ID = -20A VGS = -4.5V, ID = -15A	$R_{DS(on)}$		7.6 10.0	10.0 13.0	mΩ
Forward Transconductance VDS = -5.0V, ID = -20A	g_{fs}		42		S
Diodes Forward Voltage IS = -2.0A, VGS = 0V	V_{SD}		-0.7	-1.2	V
Input capacitance f=1MHz, VDS=-30 V, VGS=0 V	C_{iss}		3559		pF
Output capacitance f=1MHz, VDS=-30 V, VGS=0 V	C_{oss}		912		pF
Reverse transfer capacitance f=1MHz, VDS=--30V, VGS=0 V	C_{rss}		36		pF
Gate Resistance VGS = 0V, VDS = 0V, f = 1MHz	Rg		4.9		Ω
Turn-on delay time VDD= -30V, VGS= -10V, ID=-20A, R_{GEN}=3.0Ω	td (ON)		5.0		ns
Rise time VDD= -30V, VGS= -10V, ID=-20A, R_{GEN}=3.0Ω	tr		12		ns
Turn-off delay time VDD= -30V, VGS= -10V, ID=-20A, R_{GEN}=3.0Ω	td (OFF)		67		ns
Fall time VDD= -30V, VGS= -10V, ID=-20A, R_{GEN}=3.0Ω	tf		23		ns
Total Gate Charge VDS =-30V, ID =-20A, VGS =-10V VDS =-30V, ID =-20A, VGS =-4.5V	Qg		47 22		nC
Gate-Source Charge VDS =-30V, ID =-20A, VGS =-10V	Qgs		10.0		nC
Gate-Drain("Miller") Charge VDS =-30V, ID =-20A, VGS =-10V	Qgd		5.0		nC
Gate Plateau Voltage VDS =-30V, ID =-20A, VGS =-10V	$V_{plateau}$		-3.0		V
Reverse Recovery Time I_S=-20A,di/dt=100A/μs, T_J=25℃	Trr		43		nS
Reverse Recovery Charge I_S=-20A,di/dt=100A/μs, T_J=25℃	Qrr		59		nC
Maximum Continuous Drain to Source Diode Forward Current	I_S			-72	A

Typical Performance Characteristics

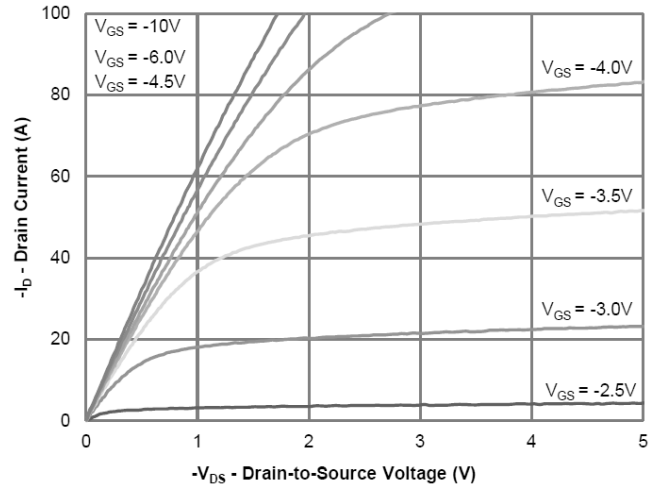


Figure 1. Output Characteristics

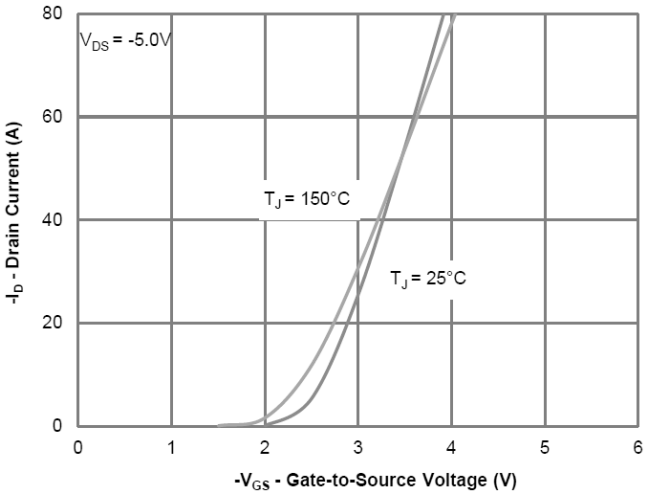


Figure 2. Transfer Characteristics

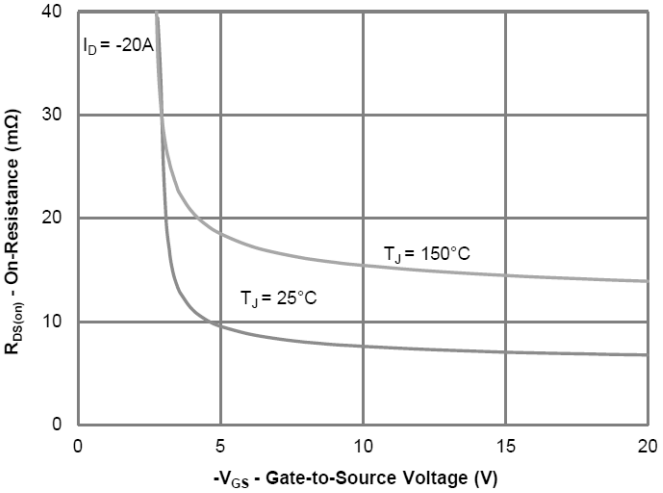


Figure 3. On-Resistance vs. Gate-Source Voltage

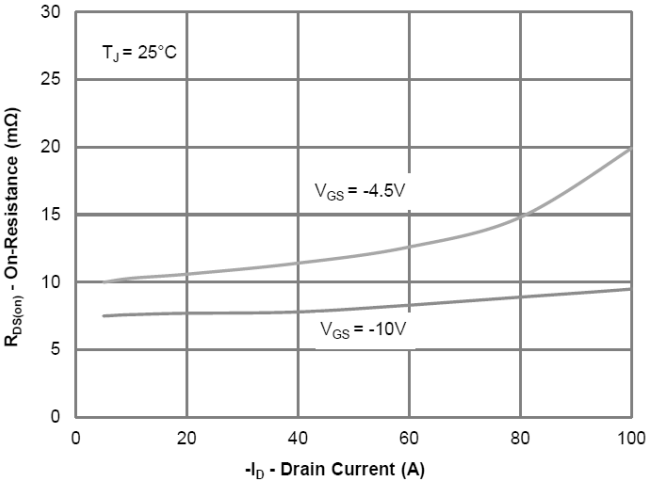


Figure 4. On-Resistance vs. Drain Current and Gate Voltage

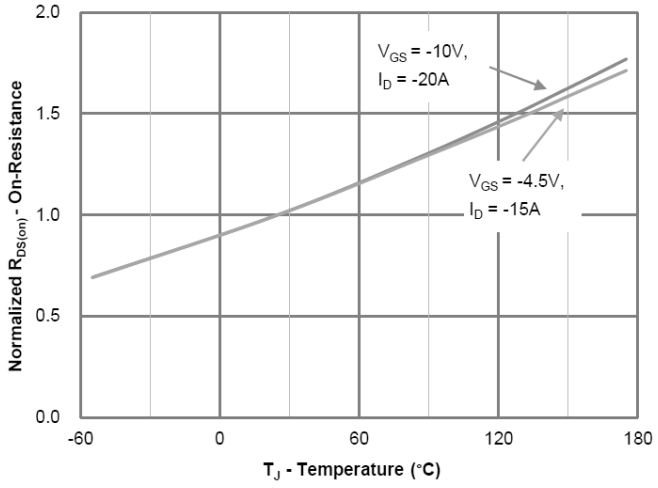


Figure 5. On-Resistance vs. Junction Temperature

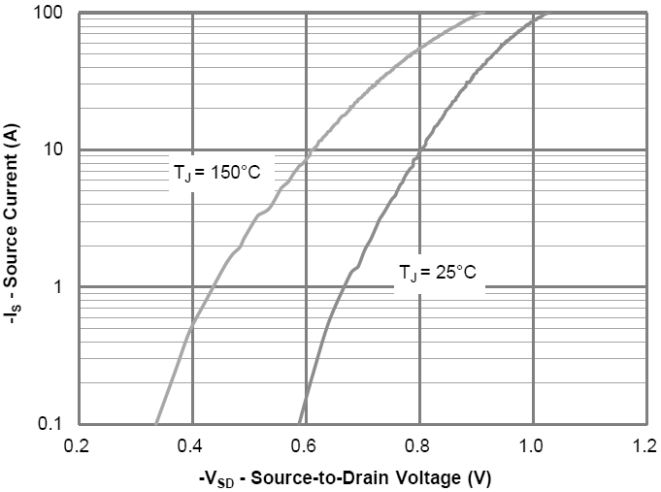


Figure 6. Source-Drain Diode Forward Voltage

Typical Performance Characteristics

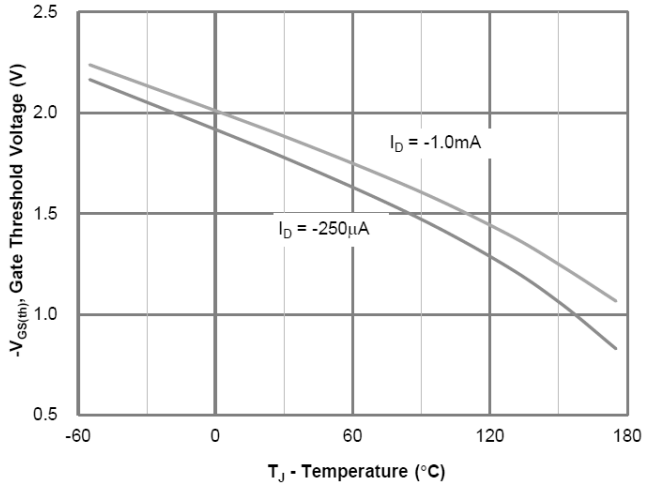


Figure 7. Gate Threshold Variation vs. Junction Temperature

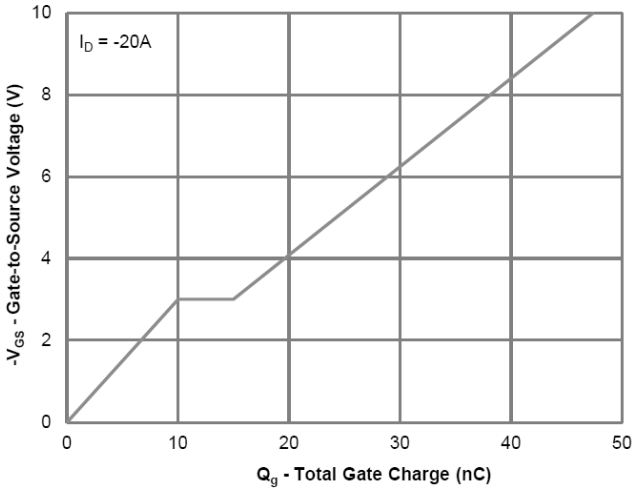


Figure 8. Gate Charge Characteristics

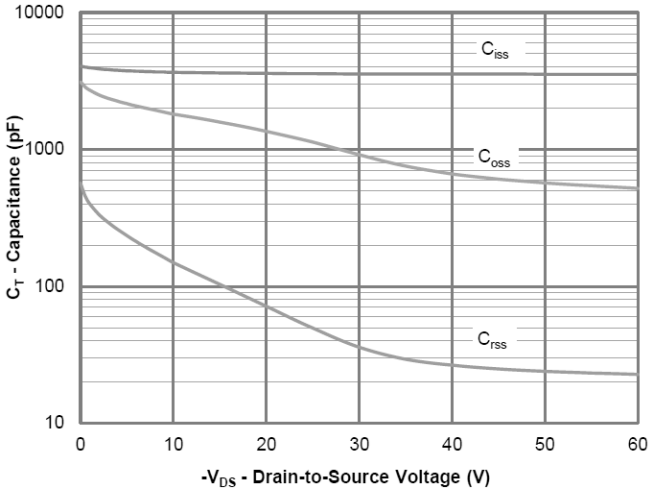


Figure 9. Capacitance Characteristics

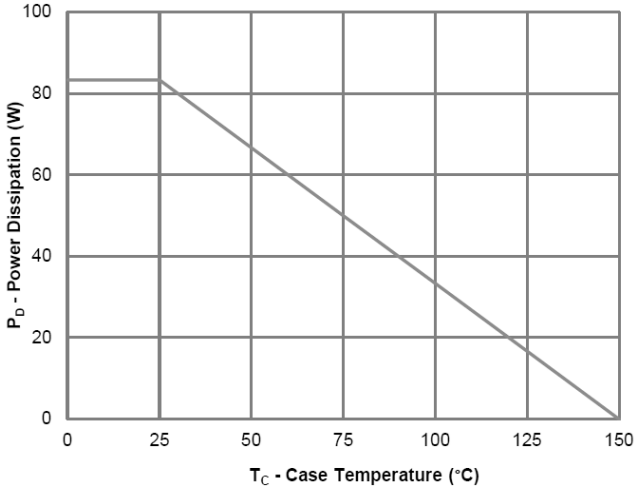


Figure 10. Power Derating

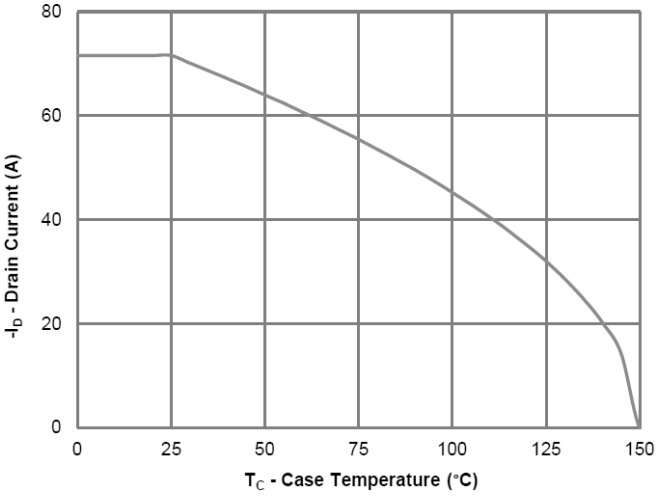


Figure 11. Current Derating

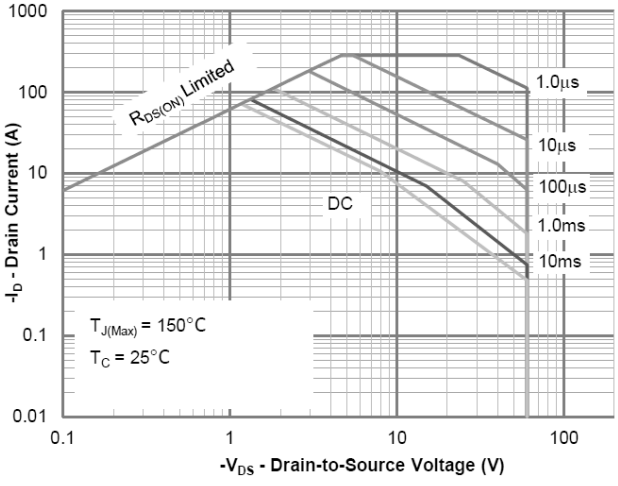


Figure 12: Safe Operating Area

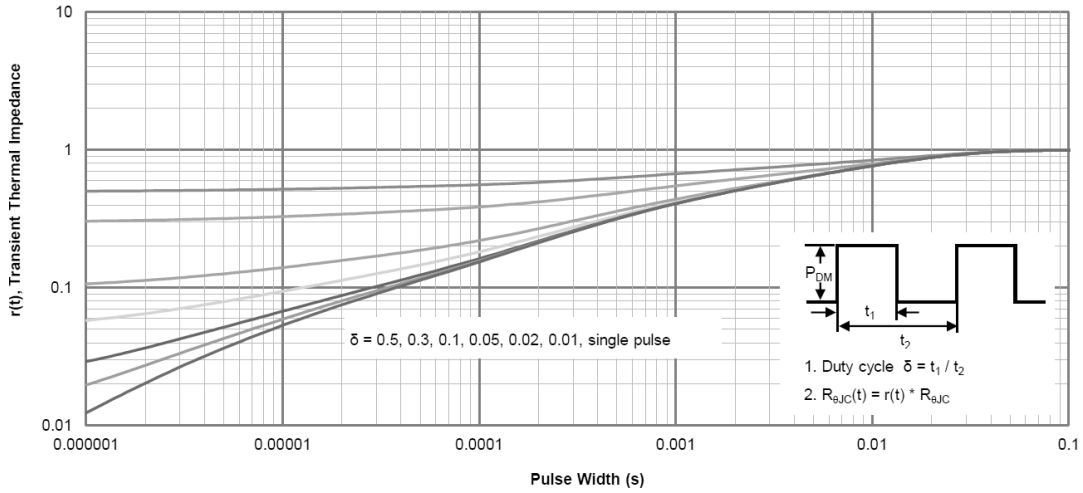
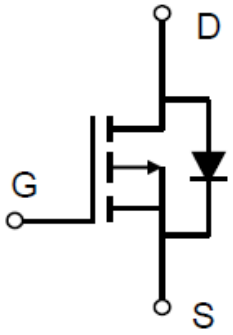
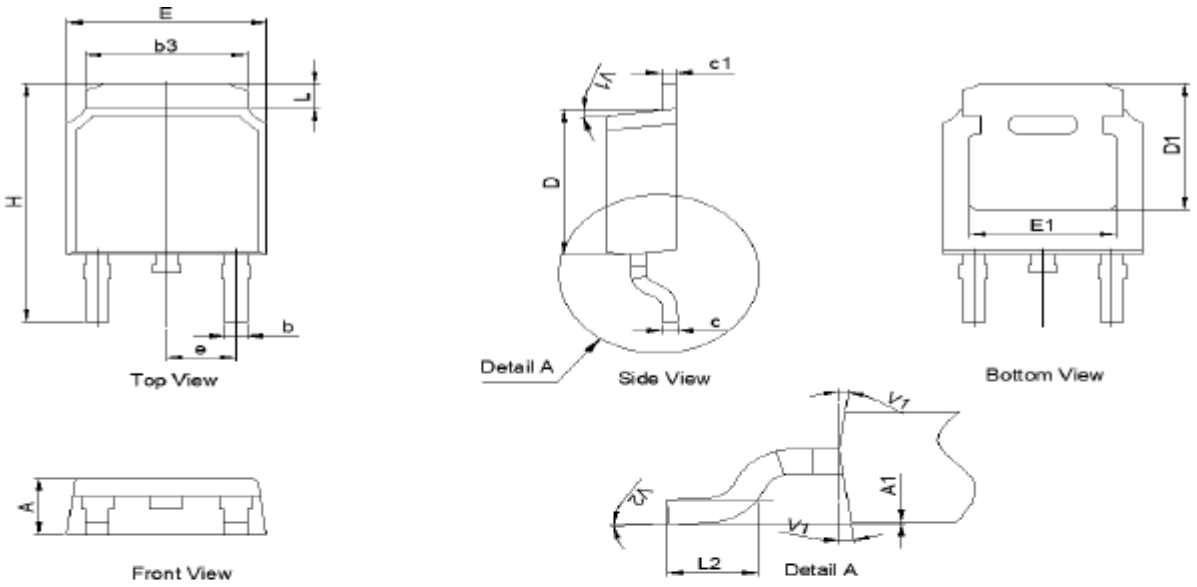


Figure 13: Normalized Maximum Transient Thermal Impedance

·Circuit diagram



·Package outlines : Dimensions in (mm)



NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M,1994.
2. ALL DIMNESIONS IN MILLIMETER (ANNGLE IN DEGREE).
3. DIMENSIONS "D" AND "E1" DO NOT INCLUDE MOLD FLASH PROTRUSIONS OR GATE BURRS.

DIM.	MILLIMETER		
	MIN.	NOM.	MAX.
A	2.20	2.30	2.40
A1	0	-	0.13
b	0.62	0.76	0.90
c	0.40	0.50	0.61
c1	0.46	0.50	0.58
D	5.90	6.10	6.30
D1	5.05	--	--
E	6.35	6.60	6.80
E1	4.32	--	--
b3	5.21	5.38	5.55
e	2.29 BSC		
H	9.40	10.00	10.40
L	0.89	--	1.27
L2	1.40		1.78
V1	7° REF		
V2	0°	-	6°

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