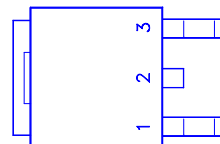
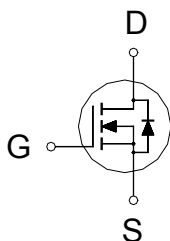


PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
25	50mΩ	12A



- 1. GATE
- 2. DRAIN
- 3. SOURCE

ABSOLUTE MAXIMUM RATINGS ($T_C = 25\text{ }^\circ\text{C}$ Unless Otherwise Noted)

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	$T_C = 25\text{ }^\circ\text{C}$	I_D	12	A
	$T_C = 100\text{ }^\circ\text{C}$		8	
Pulsed Drain Current ¹		I_{DM}	45	
Avalanche Energy	L = 0.1mH	E_{AS}	60	mJ
Repetitive Avalanche Energy ²	L = 0.05mH	E_{AR}	3	
Power Dissipation	$T_C = 25\text{ }^\circ\text{C}$	P_D	48	W
	$T_C = 100\text{ }^\circ\text{C}$		20	
Operating Junction & Storage Temperature Range		T_j, T_{stg}	-55 to 150	$^\circ\text{C}$
Lead Temperature (¹ / ₁₆ " from case for 10 sec.)		T_L	275	

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Case	$R_{\theta JC}$		3	$^\circ\text{C} / \text{W}$
Junction-to-Ambient	$R_{\theta JA}$		75	
Case-to-Heatsink	$R_{\theta CS}$	1		

¹Pulse width limited by maximum junction temperature.

²Duty cycle ≤ 1%

ELECTRICAL CHARACTERISTICS ($T_C = 25\text{ }^\circ\text{C}$, Unless Otherwise Noted)

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu\text{A}$	25			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$	0.8	1.2	2.5	V
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 20V$			±250	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 20V, V_{GS} = 0V$			25	μA
		$V_{DS} = 20V, V_{GS} = 0V, T_J = 125\text{ }^\circ\text{C}$			250	
On-State Drain Current ¹	$I_{D(ON)}$	$V_{DS} = 10V, V_{GS} = 10V$	12			A

Drain-Source On-State Resistance ¹	$R_{DS(ON)}$	$V_{GS} = 5V, I_D = 12A$	70	115	m Ω
		$V_{GS} = 10V, I_D = 12A$	48	85	
Forward Transconductance ¹	g_{fs}	$V_{DS} = 15V, I_D = 12A$	16		S
DYNAMIC					
Input Capacitance	C_{iss}	$V_{GS} = 0V, V_{DS} = 15V, f = 1MHz$	450		pF
Output Capacitance	C_{oss}		200		
Reverse Transfer Capacitance	C_{rss}		60		
Total Gate Charge ²	Q_g	$V_{DS} = 0.5V_{(BR)DSS}, V_{GS} = 10V, I_D = 6A$	15		nC
Gate-Source Charge ²	Q_{gs}		2.0		
Gate-Drain Charge ²	Q_{gd}		7.0		
Turn-On Delay Time ²	$t_{d(on)}$	$V_{DS} = 15V, R_L = 1\Omega, I_D \cong 12A, V_{GS} = 10V, R_{GS} = 2.5\Omega$	6.0		nS
Rise Time ²	t_r		6.0		
Turn-Off Delay Time ²	$t_{d(off)}$		20		
Fall Time ²	t_f		5.0		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS ($T_c = 25^\circ C$)					
Continuous Current	I_S			12	A
Pulsed Current ³	I_{SM}			20	
Forward Voltage ¹	V_{SD}	$I_F = I_S, V_{GS} = 0V$		1.5	V
Reverse Recovery Time	t_{rr}	$I_F = I_S, di_F/dt = 100A / \mu S$	30		nS
Peak Reverse Recovery Current	$I_{RM(REC)}$		15		A
Reverse Recovery Charge	Q_{rr}		0.043		μC

¹Pulse test : Pulse Width $\leq 300 \mu sec$, Duty Cycle $\leq 2\%$.

²Independent of operating temperature.

³Pulse width limited by maximum junction temperature.

REMARK: THE PRODUCT MARKED WITH "P3057LD", DATE CODE or LOT #

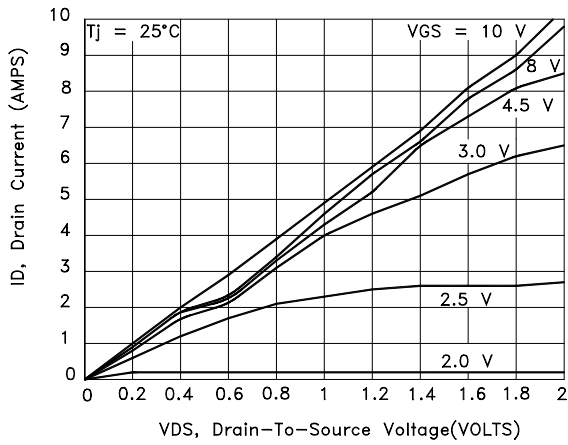


Fig.1 On-Resistance Variation with Temperature

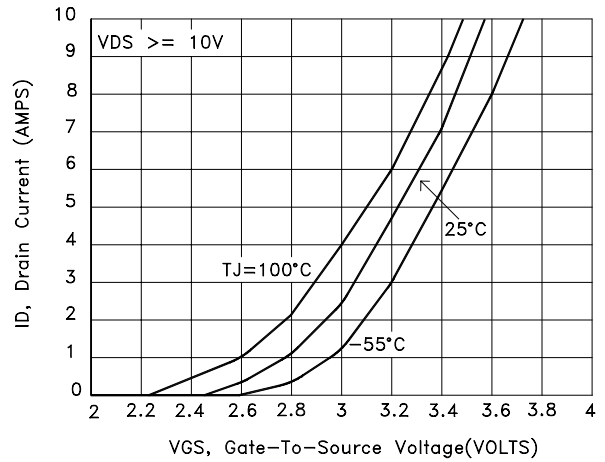


Fig.2 Transfer Characteristics

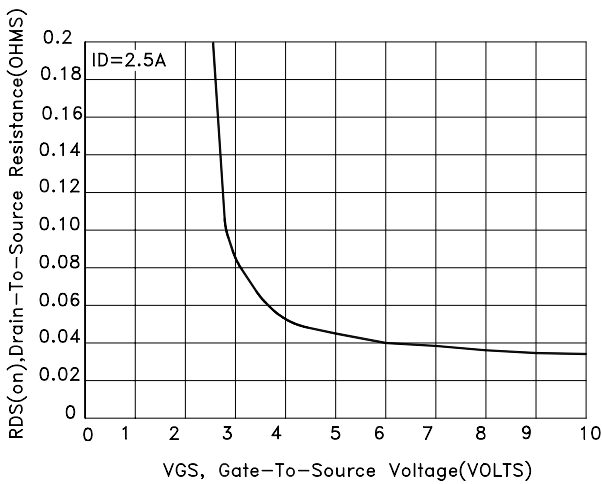


Fig.3 On-Resistance versus Gate-To-Source Voltage

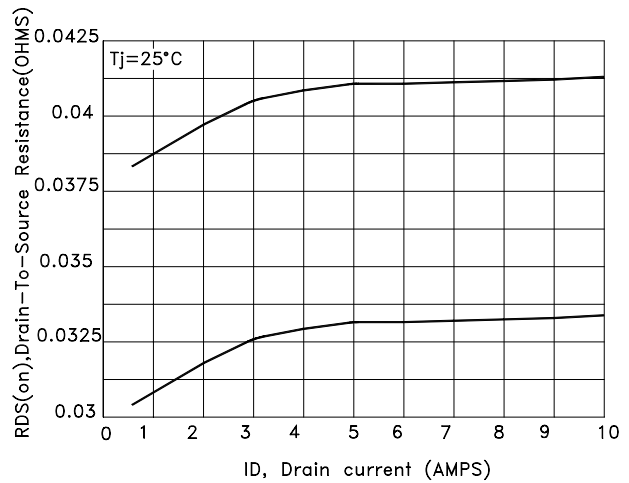


Fig.4 On-Resistance versus Drain Current and Gate Voltage

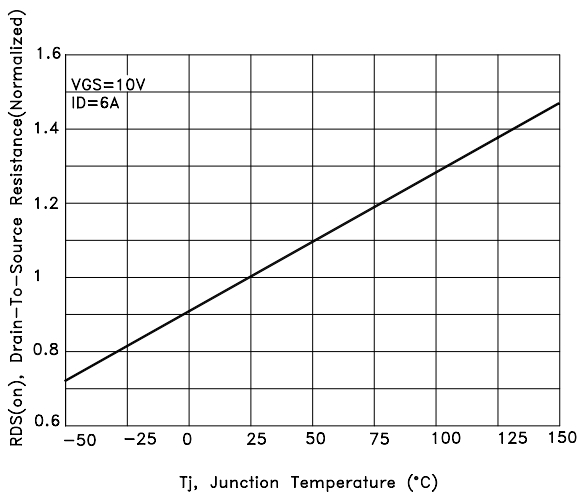


Fig.5 On-Resistance Variation with Temperature

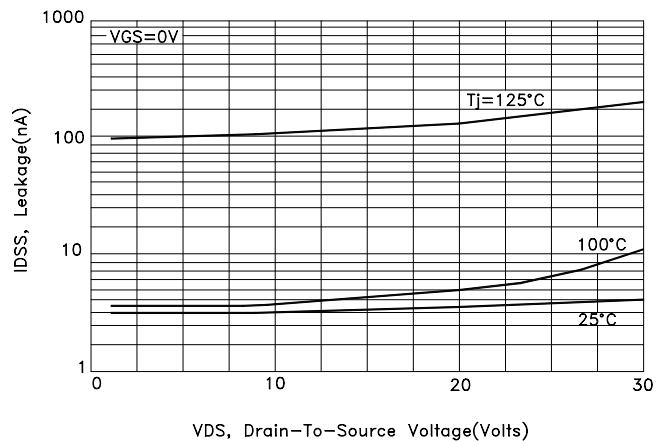


Fig.6 Drain-To-Source Leakage Current versus Voltage

TO-252 (DPAK) MECHANICAL DATA

Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	9.35		10.10	H		0.80	
B	2.20		2.40	I	6.40		6.60
C	0.48		0.85	J	5.00		5.50
D	0.89		1.50	K	0.55		1.10
E	0.45		0.60	L	0.60		1.00
F	0.03		0.23	M	4.40		4.60
G	5.20		6.20	N			

